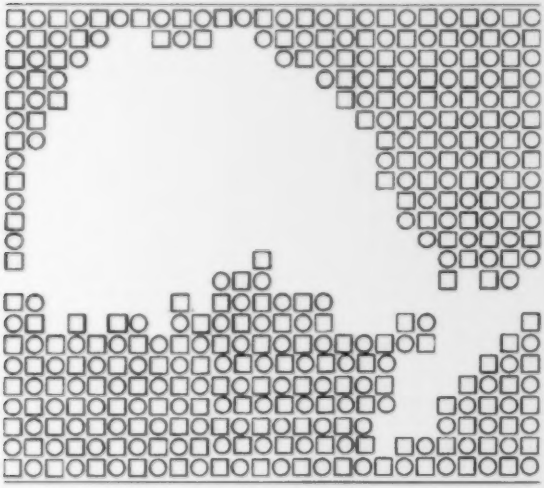
Ontario

A Guide to the Regulation Respecting Asbestos on Construction Projects and in Buildings and Repair Operations



A Guide to the Regulation respecting Asbestos on Construction Projects and in Buildings and Repair Operations

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Table of Contents

1. **Introduction** 1
   - History of the Regulation 1
   - Highlights of the Regulation 2
2. **Purpose** 3
3. **Overview of the Regulation** 5
   - Definition of Asbestos and Asbestos-Containing Material 5
   - Application of the Regulation 5
   - Analysis of ACM 5
   - Restrictions on Sprayed Material, Thermal Insulation and Application of Sealants 6
   - Asbestos Management Programs in Buildings 6
   - Demolitions, Alterations and Repairs 6
   - Notification 7
   - Classification 7
   - Glove Bag Operations 7
   - Respirators 8
   - Enclosures 8
   - Clearance Air Testing 8
   - Training 8
   - Asbestos Work Reports 8
   - Asbestos Register 9
   - Use of Equivalent Measures and Procedures 9
4. **Application** 10
   - When does the Regulation apply? 10
   - When does the Regulation not apply? 11
   - Does the Regulation apply whether or not it is known or suspected that ACM will be encountered? 11
   - What type of operations does this include? 12
   - How is the Regulation applied to projects? 12
   - How is the Regulation applied to buildings? 13
   - What is the definition of a "building"? 13

Would O. Reg. 278/05 apply to an owner even if the workplace building is no longer occupied by workers? 14

Who assumes responsibility if the property is sold? 14

Does the Regulation apply to the owner of a single residential unit if the unit is rented out to someone other than a member of the owner's family? 14

Does a MOL inspector have the authority to inspect the unit? 15

What work is covered by the Regulation respecting Asbestos, Regulation 837? 15

How does this affect employers with an Asbestos Control Program developed under Regulation 837? 15

5. **Restrictions** 16

What are the restrictions on sprayed material? 16

What are the restrictions on the application of thermal insulation? 17

What are the restrictions on sealants? 17

Why are the limits different? 18

6. **Information for Workers** 19

When must the worker be informed? 19

What is considered "in close proximity"? 19

Who must inform the worker and in what form is the advice provided? 19

Does the information in 5(2) have to be in writing? 20

7. **Demolition, Alterations and Repairs** 21

Are there any provisions in the Regulation related to demolition? 21

Does a building owner have responsibilities before tendering, contracting or arranging for demolition, alteration or repair of a building? 21

Are examinations always required before tendering or arranging for work to be done? 22

Is the owner required to prepare a report prior to tendering or arranging for work? 22

Who receives copies of this report? 23

What if the constructor or employer has started the work and material is found that may contain ACM but was not identified in the report? 23

8. Ongoing Asbestos Management 24

Examination of Building Materials 24

Asbestos Management Programs in Buildings 25

9. Examinations, Records, Reports, and Notifications 31

How is an examination to be done? 31

Records and Reports 33

Notifications 34

10. Classification of Work 38

What does the classification of work determine? 38

What is the difference between the classifications of work? 38

What operations fall within Type 1 Operation? 39

What operations fall within Type 2 Operation? 40

What operations fall within Type 3 Operation? 41

What kinds of problems occur in classifying asbestos work? 42

How is work on plaster stucco and other hard finishes that are ACM but not explicitly mentioned in the Regulation classified? 42

11. Procedures 43

What section of the Regulation sets out the measures and procedures to be used when working with ACM? 43

How are the operational procedures broken down? 43

Preparation of the Work Area 44

Dust Control 54

Personal Protective Clothing and Equipment 63

Clean-up of the Work Area and Waste Removal 65

12. Respirators 68

What are the Types of Respirators? 69

Respirator Fit 71

Respirator Maintenance 72

Breathing Air Requirements 74

Training 74
Physical Ability to Use a Respirator 75
13. Instruction and Training **76**
14 Medical Surveillance **78**
What is the purpose of the Asbestos Work Report? 78
What is the purpose of the Asbestos Workers Register? 79
Subsection 21(1) requires the employer "of a worker working in a Type 2 or a Type 3 operation" to complete an asbestos work report. Does this section apply only to workers actively involved in the operation, or would supervisors, architects, consultants and other parties not directly involved in the work be considered "workers"? 79
Should the asbestos work report be used to capture accidental asbestos exposures that may occur during an accidental discovery? 80
15. Equivalent Measures and Procedures **81**
In order to vary a measure or procedure required by the Regulation under section 23, what must be equivalent? 81
Does this mean that based on a risk assessment, the employer may re-classify an operation? For example, carrying out a Type 3 operation as a Type 2 operation? 82
May the employer use section 23 to vary the respirator required by the Regulation? 82
Appendix 1 – Glossary **83**
Appendix 2 – Sample List of Suspect Asbestos-Containing Building Materials **87**
Appendix 3 – Ministry Of Labour Asbestos Work Report Form 1 ..... **89**
Appendix 4 – Checklists for Type 1, Type 2 and Type 3 Operations **90**
Appendix 5 – Occupational Health & Safety Contact Information **122**

1. Introduction

History of the Regulation

Long recognized as a serious occupational health hazard, asbestos was one of the first designated substances to be regulated under the Occupational Health and Safety Act (the *Act*). The Regulation respecting Asbestos, Ontario Regulation 570/82, (now R.R.O. 1990 Regulation 837), was filed with the Registrar of Regulations on August 20, 1982. Construction projects were excluded from the application of this Regulation. It was the ministry's intention at the time to cover the construction industry in a second regulation that would prescribe procedures for controlling asbestos exposure.

Before development of the asbestos regulation for the construction industry could be completed, the Royal Commission on Matters of Health and Safety Arising from the Use of Asbestos in Ontario tabled its report in the legislature. The Commission recommended that the procedural approach planned for the control of asbestos exposures in the construction industry be extended to activities that involve building maintenance and custodial work. The Commission also considered Regulation 837 inappropriate for certain repair operations. The Commission's recommendations were accepted, and on December 16, 1985 the Regulation respecting Asbestos on Construction Projects and in Buildings and Repair Operations, O. Reg. 654/85, subsequently R.R.O. 1990 Regulation 838 was filed. In November 2005, Regulation 838 was revoked and replaced by O. Reg. 278/05.

Highlights of the Regulation

Most of O. Reg. 278/05 came into effect on November 1, 2005, and the remaining sections came into force on November 1, 2007. This Regulation contains significant changes in methods and procedures relative to the previous Regulation, including:

- new requirements for clearance air testing,
- a definition of asbestos-containing material, or ACM,
- methods and procedures for determining whether building materials meet the definition of ACM,
- maintenance of negative air pressure inside enclosures,
- additional requirements for training,
- procedures for the use of glove bags, and
- a new equivalency provision authorizing the constructor/employer to vary from measures and procedures set out in the Regulation if specified conditions, such as notice of the varied measures to the JHSC, are met.

2. Purpose

This Guide has been prepared to provide employers, constructors, owners, workers, health and safety representatives, members of joint health and safety committees, supervisors and occupational health personnel with guidance on the requirements of O. Reg. 278/05 and to increase the awareness of workplace parties of their duties under this Regulation.

The Guide does not prescribe how an employer must develop and implement specific components necessary for asbestos management programs in buildings; however, it answers common questions about the regulatory provisions. The Guide is not intended to replace the Regulation. In any case where the Guide may differ from the Regulation, the regulatory provisions prevail.

This Guide consists of an overview of the Regulation and a discussion of the provisions of the Regulation. **The Guide has no legal effect. Reference should be made to the Occupational Health and Safety Act (the *Act)* and O. Reg. 278/05 to ascertain the legal duties and rights of the workplace parties.**

The Guide is not intended to provide specific advice in individual circumstances. If you require assistance with respect to the interpretation of a legislative provision and its potential application to you, please contact your legal counsel.

While this guideline will be available to Ministry of Labour (MOL) inspectors, they will apply and enforce the Regulation based on the facts that they find in the workplace. This Guide does not affect their enforcement discretion in any way.

For further information on any aspect of this Regulation, contact the Inspectorate of the Ministry of Labour at the nearest ministry office. Contact information for the ministry's offices is listed in Appendix 5.

3. Overview of the Regulation

This Regulation differs from other designated substance regulations by prescribing the methods and procedures that are to be used to protect workers rather than prescribing exposure limits.

Definition of Asbestos and Asbestos-Containing Material

The Regulation defines asbestos as any of six fibrous silicates named in subsection 1(2) of the Regulation. In addition, it defines asbestos-containing material, also known as ACM, as material that contains 0.5 per cent or more asbestos by dry weight.

Application of the Regulation

The application of the Regulation is discussed in Chapter 4.

Analysis of ACM

The Regulation requires that U.S. EPA Test Method EPA/600/R-93/116 be used to determine:

- whether a material is ACM,
- the type of asbestos in the material, and
- the content of asbestos in the material.

Table 1 of the Regulation sets out the minimum number of bulk material samples to be collected from an area of homogeneous material based on the area and type of material. If it is established that a bulk material sample contains 0.5 per cent or more asbestos by

dry weight, it is not necessary to analyze other bulk material samples from the same area and the entire homogeneous material from which the sample was taken should be deemed to be ACM.

Restrictions on Sprayed Material, Thermal Insulation and Application of Sealants

Material that contains 0.1 per cent or more asbestos by dry weight must not be applied by spraying if the material can become friable. In addition, material that contains 0.1 per cent or more asbestos by dry weight must not be used as thermal insulation if it can become friable.

Subsection 4(3) of the Regulation prohibits the application of a liquid sealant to friable ACM under certain conditions.

Asbestos Management Programs in Buildings

An important part of the Regulation deals with the requirement for asbestos management programs in buildings. These provisions which specify an owner's duties regarding asbestos management are dealt with in detail in Chapter 8.

The asbestos management program will include both friable and non-friable ACM. The requirements of the asbestos management program are set out in section 8 of the Regulation.

Demolitions, Alterations and Repairs

Before requesting tenders or arranging or contracting for the demolition, alteration or repair work to be carried out on a building, machinery, equipment, aircraft, locomotive, railway car, ship or vehicle, the owner must determine if any friable or non-friable material that is likely to be handled, dealt with, disturbed or removed during the work meets the definition of ACM or else treat it as if it does in accordance with this Regulation.

Notification

There are several circumstances which require a constructor or employer to give written and oral notice to a Ministry of Labour inspector at the office nearest the workplace, as well as the owner, contractor and the joint health and safety committee (JHSC) or health and safety representative. These include:

Notice to all parties:

- discoveries of material not referred to in the owner's report that may be ACM during the course of demolition, alteration or repair of machinery, equipment, or a building, aircraft, locomotive, railway car, vehicle or ship.

Notice to Ministry of Labour inspector:

- before beginning any Type 3 operation, and
- before beginning a glove bag operation in which one square metre or more of insulation is to be removed.

Notice to the JHSC or Health and Safety Representative:

- variations from methods and procedures set out in the Regulation.

Classification

The Regulation requires that all work that may expose a worker to asbestos be classified as a Type 1, Type 2, or Type 3 operation. The procedures for carrying out Type 1, Type 2, and Type 3 operations are outlined in sections 14, 15, 16, 17, and 18 of the Regulation.

Glove Bag Operations

All glove bag operations (such as the removal of insulation that is ACM from a pipe or duct or similar structure) are now defined as Type 2 operations by paragraph 9 of section 12(3). The Ministry of Labour must be notified of glove bag removal operations involving the removal of one square metre or more of insulation.

Respirators

In the Regulation, section 13 sets out the general requirements for respirators while Table 2 lists the required types of respirators for specific Type 1, Type 2, and Type 3 operations.

Enclosures

The Regulation sets out the requirements for enclosures where enclosures are used for some Type 2 and Type 3 operations.

Clearance Air Testing

The Regulation requires that clearance air testing be carried out inside the enclosures used on indoor Type 3 operations described in paragraph 1, 2, 3, 4 or 6 of subsection 12(4) in buildings that will not be demolished.

Training

Training for all workers who carry out asbestos operations must be delivered by a "competent person", as defined by the *Act*. These training requirements are set out in section 19.

In addition, any worker or supervisor who works in a Type 3 operation must successfully complete the Asbestos Abatement Worker Training Program or the Asbestos Abatement Supervisor Program approved by the Ministry of Training, Colleges and Universities. These training requirements are set out in section 20. Training is discussed in more detail in Chapter 10 of this Guide.

Asbestos Work Reports

Section 21 sets out the requirement for an asbestos work report which must be completed at least once in each 12 month period for each worker involved in Type 2 or Type 3 operations or upon termination of employment. The report must be submitted to the Provincial Physician of the Ministry of Labour. Each worker must be given a

copy of his or her own report. Form 1, the Asbestos Work Report, is available from each local Ministry of Labour office.

Asbestos Register

Section 22 requires the Provincial Physician to establish an Asbestos Workers Register using the data obtained from Asbestos Work Reports submitted by employers. This section also deals with the requirements for voluntary medical surveillance of asbestos-exposed workers on the recommendation of the Provincial Physician.

Use of Equivalent Measures and Procedures

Section 23 allows employers or constructors to vary from the methods and procedures required by the Regulation provided that the varied method or procedure provides protection for the health and safety of workers that is **at least equal** to the protection that would be provided by adhering to the specific measures and/or procedures specified in the Regulation. The joint health and safety committee(s) or the health and safety representative in a workplace must be notified of the changes.

4. Application

When does the Regulation apply?

The Regulation applies to:

- every project and its owner*;
- every constructor, employer and worker engaged in or on the project;
- the repair, alteration or maintenance of a building;
- every employer and worker involved in the repair, alteration or maintenance of the building and the owner of the building;
- every building in which material that may be ACM has been used and the owner of the building;
- the repair, alteration, or maintenance of machinery, equipment, aircraft, ships, locomotives, railway cars and vehicles and work on a building that is necessarily incidental to the repair, alteration or maintenance of machinery or equipment where it is likely that ACM may be handled, dealt with, removed or disturbed, and every employer and worker engaged in this work to which Regulation 837 does not apply;
- the demolition of machinery, equipment, aircraft, ships, locomotives, railway cars and vehicles; and
- every employer and every worker engaged in the demolition. This includes contractors and subcontractors who perform work for or supply services to the employer.

*Note: An owner is defined in the *Act* and includes a trustee, receiver, mortgagee in possession, tenant, lessee, or occupier of any lands or premises used or to be used as a workplace, as well as a person who acts for or on behalf of an owner as an agent or delegate.

When does the Regulation not apply?

The exemptions from the Regulation are set out in subsections 2(3) and 2(4).

The Regulation does not apply:

- to the owner of a private home that is occupied by the owner or the owner's family;
- to the owner of a residential building that contains no more than four units, one of which is occupied by the registered owner or family of the registered owner;

However, the Regulation does apply to constructors, employers and workers engaged in private construction projects and repair or maintenance of such buildings.

Employers to whom Regulation 837 (Designated Substance – Asbestos) applies whose workers are engaged in specified operations (clause 2(1)(e)) who, on or before December 16, 1985, put into effect and maintained a control program made under Regulation 837, are exempt from the Regulation. A control program is a comprehensive program that actively manages and controls exposure to asbestos.

Does the Regulation apply whether or not it is known or suspected that ACM will be encountered?

Yes. The Regulation applies **whether or not** it is known or suspected that ACM will be encountered during a project, repair, alteration or maintenance of a building, or demolition of machinery, equipment, aircraft, ships, locomotives, railway cars and vehicles. This ensures that material that may be handled, disturbed or removed will be examined to determine whether it is ACM or will be treated as though it is ACM.

The Regulation also applies to specified operations if ACM is likely to be handled, dealt with, disturbed or removed during the course of the work.

What type of operations does this include?

These operations include:

- the repair, alteration or maintenance of machinery, equipment, aircraft, ships, locomotives, railway cars, and vehicles, and
- work on a building that is necessarily incidental to the repair, alteration or maintenance of machinery or equipment.

The Regulation also applies to owners and to employers and workers engaged in these operations. This is spelled out in detail in subsections 2(1) and 2(2) of the Regulation.

How is the Regulation applied to projects?

The Regulation applies to the owner of a project, and to every constructor, employer and worker who works in or on the project. An employer includes all contractors and subcontractors.

Construction projects at which ACM may be handled include new construction, demolition projects and renovation and repair work on a building.

In new construction, ACMs will be handled for the most part only when manufactured products, such as asbestos-cement pipes and panels, are installed.

On demolition projects, products meeting the definition of ACM that are no longer used in new construction will be found. These include sprayed-on insulation and fireproofing, pipe and boiler insulation, ceiling and floor tiles, and drywall compound. Section 6 of the Regulation requires that all friable and non-friable ACM that may be disturbed during demolition be removed **to the extent** practicable before work may start or be continued.

How is the Regulation applied to buildings?

The Regulation applies to every employer and worker in a building engaged in a project, repair, alteration, maintenance or demolition and work incidental to such activity. It is important to note that the term "owner", as defined by the *Act*, includes tenants. Depending upon the circumstances a tenant may be considered to be an "owner" or may be considered to be an "occupier". Once notified by an owner of the presence, in the area he or she occupies, of ACM or material being treated as ACM, the occupier takes on the responsibilities set out in the Regulation for notifying and training his or her own workers.

Section 30 of the *Act* requires the **owner of a project** to prepare a list of designated substances on the project, including asbestos, before tendering the project. The owner must then give this list to all persons submitting tenders for the project. This section of the *Act* applies to the owners of residential properties who undertake projects, and helps to ensure that constructors or employers who carry out these projects are aware of the presence of asbestos in these buildings.

Buildings that contain material that may be ACM are covered by the Regulation even when no work is being done on them. The owners of these buildings are required to maintain an asbestos management program even when no work is being done on them.

What is the definition of a "building"?

Section 1 of the Regulation defines "building" very broadly to include any structure, its services, and any vault, chamber, or tunnel. This includes residential, office, factory and mine buildings and their plumbing, electrical, heating and ventilation systems. This means that if work is being done on the electrical system, such as the re-lamping of all or part of a building, it would be interpreted as an alteration to the building and the Regulation would likely apply.

Would O. Reg. 278/05 apply to an owner even if the workplace/building is no longer occupied by workers?

The Regulation applies to every building in which material that may be ACM has been used and to the owner of the building regardless of whether or not the building is occupied by workers. The Regulation would apply to an owner of a building that is no longer occupied and would require, among other things, an asbestos management program.

Who assumes responsibility if the property is sold?

Once the property is sold, the new owner assumes all duties and obligations prescribed by the Regulation.

Does the Regulation apply to the owner of a single residential unit if the unit is rented out to someone other than a member of the owner's family?

Yes. The Regulation applies to the owner if the tenant occupying the unit is not related to the owner.

If, however, the owner or the owner's family occupies the unit, the exemption under subsection 2(4) would apply to the owner of the single residential unit.

Does a MOL inspector have the authority to inspect the unit?

Subsection 54(2) of the *Act* states "an inspector may only enter a dwelling or that part of a dwelling actually being used as a workplace with the consent of the occupier or under the authority of a warrant issued under this *Act* or the *Provincial Offences Act*."

What work is covered by the Regulation respecting Asbestos, Regulation 837?

Regulation 837, previously O. Reg. 570/82, originally applied to all workplaces, except construction projects, where there was an asbestos hazard. Many of these workplaces were to be covered by the new asbestos regulation governing construction projects and buildings and repair operations (now O. Reg. 278/05). To avoid overlap when the new Regulation came into force, O. Reg. 570/82 was amended on March 16, 1986 to restrict its application to the mining of asbestos, the manufacture of asbestos products and, as will be discussed below, to certain work carried out by workers of an employer who had an asbestos control program developed under O. Reg. 570/82 in place on or before December 16, 1985.

How does this affect employers with an Asbestos Control Program developed under Regulation 837?

Subsection 2(3) of the Regulation states that the alteration, maintenance and repair of machinery, equipment, aircraft, ships, locomotives, railway cars, and vehicles and work on a building that is necessarily incidental to the repair, alteration or maintenance of machinery or equipment, in which ACM is likely to be handled, dealt with, disturbed or removed is not covered by the Regulation if it is carried out by an employer in accordance with Regulation 837.

Where the employer had a control program in place on or before December 16, 1985, and then sold the business, decisions concerning the application of the Regulation must be made on a case-by-case basis.

5. Restrictions

The Regulation prohibits the application or installation, by spraying, of material containing 0.1 per cent or more asbestos by dry weight that can become friable and the application or installation of material containing 0.1 per cent or more of asbestos by dry weight as thermal insulation if it may become friable.

Subsection 4(3) of the Regulation prohibits the application of a liquid sealant to friable ACM under certain conditions if the material has visibly deteriorated or is no longer able to support its weight and the weight of the sealant.

What are the restrictions on sprayed material?

The spray application of insulation that contains asbestos can generate high airborne levels of asbestos and may present a hazard to the workers who apply the material. Moreover, if the material is friable or can become friable, there will be a continuing hazard to demolition, renovation, maintenance and custodial workers who may have to deal with it in the future. In addition, the presence of asbestos-containing insulation in a building may require an on-going management program to protect the occupants of the building.

It is because of these ongoing problems and the ready availability of substitutes that the spray application of material containing 0.1 per cent or more asbestos by dry weight that can become friable is **prohibited**.

It should be noted, however, that there are conditions imposed on this prohibition. It applies only to materials that can become friable. Some ACM, such as automotive undercoatings can be applied by spraying because they do not become friable and release fibres.

What are the restrictions on the application of thermal insulation?

Asbestos-containing pipe and boiler insulation can cause the same kinds of problems as those associated with sprayed materials containing asbestos. While the installation of pipe and boiler insulation may not be as hazardous as the spray application of materials containing asbestos, the heat from the pipe or boiler causes the installed insulation to become increasingly fragile. The removal of old insulation could therefore generate more dust than the original installation. Damage to, or deterioration of, the insulation could also endanger building occupants. It is because of this continuing hazard that the further installation of such materials is **prohibited**.

As with sprayed materials, the prohibition is limited to insulation containing 0.1 per cent or more asbestos by dry weight that may become friable.

What are the restrictions on sealants?

Sealants or bonding agents are materials that can be applied to ACM, particularly thermal insulation, to prevent the release of fibres. This is commonly referred to in the industry as "encapsulation". There are two types of sealant:

- Penetrants penetrate and harden the material; and
- Bridging sealers produce a tough, impermeable coating on the surface.

Although encapsulation can be a practical method to control the release of asbestos fibres, certain limitations make it useful in a relatively small number of cases. Situations where a sealant must not be used are spelled out in subsection 4(3) of the Regulation.

Why are the limits different?

The restriction on the application of sprayed-on material or thermal insulation starts at 0.1 per cent, yet the rest of the Regulation only applies when the asbestos content is 0.5 per cent or more.

The two limits are not related. The 0.5 per cent applies to existing materials that meet the definition of ACM.

The 0.1 per cent limit applies specifically to new material to be sprayed or new thermal insulation to be installed and represents the concentration at which asbestos must be reported on material safety data sheets under the existing Federal Workplace Hazardous Materials Information System (WHMIS) legislation.

6. Information for Workers

When must the worker be informed?

The worker must be informed when the work they are doing involves material that is:

- ACM;
- being treated as if it were ACM;
- found in a building of which the employer is not the owner and may contain ACM.

The worker must also be advised if the work they are doing is in close proximity to the ACM and as a result may disturb it.

What is considered "in close proximity"?

The proximity of the work must be close enough that ACM may be disturbed during the doing of the work. This will have to be determined on a case-by-case basis.

Who must inform the worker and in what form is the advice provided?

The constructor or the employer must advise the worker and provide information that clearly indicates:

- the location of all known ACM;
- the location of all material being treated as though it were ACM; and/or,
- all material that may be ACM that is found in a building and

is the subject of a notice from the employer (engaged in the work) to the owner of the building.

The constructor or the employer must also advise the worker whether the material in each location is friable or non-friable. In those cases where the friable material has been sprayed on, the worker must be advised (if the material is known to be ACM), of the type of asbestos (if known) or in any other case a statement that the material will be treated as though it contains a type of asbestos other than chrysotile.

Where the employer is also the owner of the building and his or her workers **may** do work that involves material described in subsection 8(2), the owner must also advise those workers of the:

- location of said material;
- whether the material is friable or non-friable;
- in the case of friable sprayed-on material, the type of asbestos (if the material is known to be ACM) or in any other case a statement that the material will be treated as though it contained a type of asbestos other than chrysotile.

Does the information in 5(2) have to be in writing?

While the Regulation does not specify how the information is to be provided, the Ministry recommends that the employer provide the information in writing to avoid any uncertainty about whether the information has been provided.

7. Demolition, Alterations and Repairs

The Regulation sets out the requirements related to the demolition, alteration and repair of a building including the responsibilities of an owner before tendering or arranging for demolition, alteration or repair of a building.

Are there any provisions in the Regulation related to demolition?

Demolition may only be carried out or continued when any ACM that may be disturbed has been removed to the extent practicable (subsection 6(1)).

Demolition work must not be prevented in situations where the work is required to gain access to the ACM that must be removed. In these cases the workers must be protected from the hazards (subsection 6(2)).

Does a building owner have responsibilities before tendering, contracting or arranging for demolition, alteration or repair of a building?

Yes. The owner must have an examination carried out to establish whether any material that is likely to be handled, dealt with, disturbed or removed, whether friable or non-friable, is ACM. For more information on examinations see Chapter 9 of this Guide.

The owner must have a report prepared that states whether the material is ACM, whether the work is to be performed as though it were ACM and in the case of sprayed on material, as though it contained a type of asbestos other than chrysotile. In addition the report must: describe the condition of the material; specify whether

the material is friable or non-friable; and show the location of the material.

The owner must give any prospective constructor a copy of this report.

Where the owner is also the employer, he or she must give the notice required by subsection 10(8) to contractors and JHS Committees or health and safety representatives in the circumstances specified.

In the circumstances specified in subsection 10(10) the owner must also ensure that no work involving the handling or disturbing or removal of the material is performed unless it has been determined that the material is ACM or the work is performed in accordance with the Regulation as though the material were ACM.

Are examinations always required before tendering or arranging for work to be done?

No. An examination is not required if:

- the owner already knows that the material is not ACM;
- where the owner knows that the material is ACM, and, in the case of sprayed-on friable material, knows the type of asbestos; or
- where the work is being arranged or contracted for in accordance with the Regulation as though the material is ACM, and, in the case of sprayed-on friable material, where the owner agrees to treat the material as though it contains a type of asbestos other than chrysotile.

Is the owner required to prepare a report prior to tendering or arranging for work?

Yes, the owner is required to have a report prepared, regardless of whether an examination is required or not. The owner must prepare a report that includes the following information:

- whether the material is ACM or whether the work will be done in accordance with the Regulation as though the material is ACM, and, in the case of sprayed-on friable material, that it will be done as though the asbestos is of a type other than chrysotile;
- a description of the condition of the material and whether it is friable or non-friable; and
- drawings, plans and specifications, as appropriate, showing the location of the material at issue.

Who receives copies of this report?

The owner must give the report to all potential constructors. The constructor, in turn, must give the report to all potential contractors, and a contractor must give the report to all potential sub-contractors.

The information must be provided when the work is being arranged for, so that the costs of these regulatory obligations can be included in the bids and so that any other necessary measures/procedures can be implemented before the work begins.

What if the constructor or employer has started the work and material is found that may contain ACM but was not identified in the report?

The constructor or employer must immediately notify in writing and orally an MOL inspector at the office of the Ministry of Labour nearest the workplace; the building owner; the contractor and the JHSC or the health and safety representative.

Other than for the purposes of determining whether the material is ACM, no work must be done unless it is determined that the material is ACM or the work is performed in accordance with the Regulation as though the material is ACM or in the case of sprayed on material, as though it contained a type of asbestos other than chrysotile.

8. Ongoing Asbestos Management

The obligations of the building owner are set out in sections 8 and 10 of the Regulation. Section 8 deals with the ongoing management of asbestos in buildings. Section 10 sets out the requirements that an owner must fulfil before tendering, contracting or arranging for demolition, alteration or repair of all or part of machinery, equipment or a building, aircraft, locomotive, railway car, vehicle or ship.

This chapter is confined to those obligations specified in section 8 that relate to ongoing asbestos management.

If the owner is also the employer, then he or she must perform other duties specified in the Regulation in specified circumstances.

Examination of Building Materials

The Regulation sets out two situations where a building owner may have to have the material examined to determine if it is ACM. These are addressed in section 8 and in section 10 of the Regulation. As stated above, this chapter is confined to those obligations specified in section 8.

As a building owner am I required to examine material that has fallen and that may be asbestos?

Yes. Subsection 8(8) requires that even where no work is being done to a building, if friable material used as fireproofing or acoustical or thermal insulation has fallen and is being disturbed, all work involving the material must cease and the owner must have the material examined as set out in section 3 in order to determine whether it is ACM.

If the owner decides to treat the material as though it is ACM, an examination is not required. However, sprayed-on friable material must be treated as though it contains a type of asbestos other than chrysotile.

What is meant by "is being disturbed?"

It is the Ministry's position that being disturbed refers to any activity that may result in the release of fibres into the air.

What must the owner do with the fallen material?

If the material is ACM or will be treated as though it is ACM, the owner must have the fallen material cleaned up and removed. If it is readily apparent that the material will continue to fall the owner must repair, seal, remove or permanently enclose the material. This is not required if the fallen material is confined to the area above a closed false ceiling that is not part of a return air plenum.

Asbestos Management Programs in Buildings

Section 8 of the Regulation requires asbestos management programs in various circumstances such as when an owner knows or ought reasonably to know of the presence of friable and non-friable ACM in a building and when an owner may also choose to treat friable and non-friable material that has been used in a building for any purpose related to the building as though it is ACM.

When is an asbestos management program required?

Asbestos management programs are required in numerous situations such as when:

- the owner of a building knows or ought reasonably to know or has been informed by an employer of workers in the building that material that has been used in the building for any purpose related to the building is ACM;

- the owner decides to treat material that has been used in the building for any purpose related to the building as ACM;
- an examination of the material determines or would have determined if carried out that the material is ACM; or
- a constructor or employer notifies the owner of a building of the discovery of material that may be ACM and that was not referred to in the report required by subsection 10(4).

What does an asbestos management program include?

An asbestos management program must include provisions for:

- preparing a record containing the location and condition of ACM and other material that may be ACM or is treated as if it were ACM in specified circumstances; whether said material is friable or non-friable; in the case of sprayed on material the type of asbestos (if known) or a statement that the material will be treated as though it contained a type of asbestos other than chrysotile (in any other case).
- the report must be updated at least once every 12 months and whenever the owner becomes aware of new information;
- inspections of ACM mentioned in the record at reasonable intervals;
- examination of friable material used in a building as fireproofing or thermal or acoustical insulation that has fallen and is being disturbed so that exposure is likely to occur unless the work at issue is being carried out as though the material were ACM; and, in the case of sprayed-on friable material, as though it contains a type of asbestos other than chrysotile;
- written notification to workers, occupiers, and employers of the relevant information in the record in specified circumstances;
- training of workers regarding hazards of asbestos exposure; use, care and disposal of protective equipment and clothing,

personal hygiene, and the measures and procedures described in the Regulation;

- cleanup of fallen ACM or fallen friable material treated as ACM; and
- removal, sealing or enclosure of deteriorated material if the material is established as ACM or treated as though it were ACM where it is readily apparent that it will continue to fall unless the fallen material is confined to an area that is above a closed false ceiling and not part of a return air plenum.

Asbestos Record

The owner must prepare and keep on the premises a record of the condition and location of all ACM or material that will be treated as if it were ACM and whether the material is friable or non-friable. In the case of friable sprayed-on ACM the report must state what type of asbestos the material contains, or it must contain a statement that the material will be treated as though it contains a type of asbestos other than chrysotile.

Inspection of Material

The owner must have the material mentioned in the record inspected at regular intervals to determine its condition, and must update the record at least once in each 12 month period and whenever the owner becomes aware of new information relating to matters the record deals with.

Sprayed-on insulation is usually the most significant source of airborne asbestos fibres. Indicators of poor condition include debris on horizontal surfaces, hanging material, dislodged chunks, scrapings, indentations and cracks. Since water can dislodge, delaminate or otherwise disturb the insulation, insulated areas should be inspected for visible signs of water damage. On pipe and boiler insulation, protective jackets prevent fibre release. It is recommended that inspections should therefore concentrate on checking the protective jacket for damage and the condition of the unjacketed joints and elbows.

Notification of Occupiers

The owner must give the occupiers of the building written notice of any information in the record that relates to the areas they occupy.

An occupier who receives a notice about ACM, or material that will be treated as ACM, and that is located in the area they occupy, must notify his or her workers and establish a training program for them.

Notification of Employers

The owner may contract or arrange with an employer, such as a contractor who installs computer networks, work that is not covered by subsection 10(1). In this case the owner must give the employer written notice of the information in the record if the work may involve the materials mentioned in the record, or if the work may be carried out in close proximity to the materials mentioned in the record and may disturb it.

Notification of Workers

The owner may employ workers in the building whose work may involve the materials mentioned in the record, or who may work close to the materials mentioned in the record and may disturb it. In this case the owner must advise the workers of the information in the record.

Worker Training

The owner must also set up a training program for workers who may do work that involves the materials mentioned in the record or is to be carried on in close proximity to those materials. The training program must address:

a) the hazards of asbestos exposure;

b) use, care and disposal of personal protective clothing and equipment;

c) personal hygiene; and

d) the measures and procedures required by the Regulation.

What are the allowable control options for deteriorating insulation?

The presence of deteriorating ACM insulation should be readily detected in a building with a regular inspection program.

Inspections are required in buildings that contain **friable or non-friable** ACM. Section 8(8) of the Regulation deals with the situation where friable fireproofing or acoustical or thermal insulation has fallen and is being disturbed. If this material is not known to be ACM, the owner must have the material examined to determine if it contains asbestos. If the deteriorating insulation is ACM, or is to be treated as ACM, remedial action must be taken.

No further work involving the material must be done until it has been determined whether the material is ACM.

Four options are available. The insulation can be repaired, sealed, removed or permanently enclosed.

Repair

When damage to pipe or boiler insulation is limited, repair is the easiest control option. Non-asbestos plastering can restore open joints, wrapped or plastered areas that are damaged and areas around valves and flanges.

Sealing

The spray application of a sealant to friable ACM is classified as a Type 3 operation under paragraph 2 of subsection 12(4) and all measures and procedures prescribed in section 15, subsection 18(3) (outdoor) and subsection 18(4) (indoor) for Type 3 operations must be followed/complied with when engaging in this type of operation.

It is recommended that sealants be used only on granular, cementitious material and applied with airless equipment. A sealant should penetrate the ACM and adhere adequately to the substrate. It should also withstand moderate impact, be flexible and flame retardant, resist deterioration over time and be non-toxic.

The U.S. Environmental Protection Agency (US EPA) has evaluated over 100 sealants and recommends that sealants be tested on-site over several days.

Sealants are not recommended for use if the ACM is deteriorated or delaminated or where the ACM may be repeatedly abused. Liquid sealants cannot be applied to friable ACM if the material has visibly deteriorated or if the material's strength and its adhesion to the underlying materials and surfaces are insufficient to support its weight and the weight of the sealant. Refer to subsection 4(3) which describes in more detail the situations where a liquid sealant cannot be used.

Enclosure

Enclosure involves the construction of airtight walls and ceilings around the ACM. It can be a highly effective method of protecting building occupants from asbestos fibre release if the enclosure is properly constructed. The construction material should be impact-resistant and assembled to be airtight. Suspended ceilings with lay-in panels are not acceptable. The advantages and disadvantages of the enclosure option are similar to those of encapsulation. In addition, because fibre release can continue within the enclosure, special procedures have to be established to control access to the enclosure for maintenance and renovation.

Removal

The major advantage of removing ACM is that, if done properly, it permanently eliminates the ACM and, with it, the potential for exposure. If the ACM is removed from the entire building, it is the one control option that removes the need for an asbestos management program. The major disadvantages of the removal option are that it is expensive and often complex. If the work is not done correctly there is a high risk of exposure for the workers carrying out the removal and a high risk of contaminating the building.

9. Examinations, Records, Reports, and Notifications

As noted in the previous chapters, the requirement to examine material to determine whether it is ACM is crucial to the application of the Regulation. The classification of work involving ACM, set out in section 12 of the Regulation, and the adoption of appropriate measures and procedures, set out in sections 14 through 18, requires that ACM is known to be present or that the work will be done as though ACM were present. In the case of friable sprayed-on ACM the type of asbestos must also be known or assumed to be a type of asbestos other than chrysotile.

How is an examination to be done?

The methods and procedures for determining the asbestos content and the type of asbestos present in the material are set out in section 3.

U.S. Environmental Protection Agency Test Method EPA/600/R-93/116 has been adopted as the method to be used to determine whether the material is ACM and what type of asbestos is contained in the material.

The minimum number of bulk material samples to be collected from an area of homogeneous material is set out in Table 1 of the Regulation (a copy of the table is also provided in Table 1 of this Guide).

Homogeneous material is defined as material that is uniform in colour and texture. If one bulk sample is found to meet the definition of ACM, the other samples of that material do not have to be analyzed. The whole area where the homogeneous material came from can be considered to be ACM.

TABLE 1
BULK MATERIAL SAMPLES
O. Reg. 278/05 Subsection 3 (3)

Item	Type of Material
1.	Surfacing material, including without limitation material that is applied to surfaces by spraying, by troweling or otherwise, such as acoustical plaster on ceilings and fireproofing materials on structural members
2.	Thermal insulation, except as described in item 3
3.	Thermal insulation patch
4.	Other material

Size of area of homogeneous	**Minimum number of bulk material samples to be collected**
Less than 90 square metre	3
90 or more square metres, but less than 450 square metres	5
450 or more square metres	7
Any size	3
Less than 2 linear metres or 0.5 square metres	1
Any size	3

Guidance on bulk sampling procedures, bulk sampling equipment and other considerations are provided in paragraphs 44 to 54 and Annex 2 of the British Health and Safety Executive (HSE) MDHS Method 100. The Method can be accessed through the HSE website at www.hse.gov.uk.

An examination and the development of an asbestos management program can be simplified by consulting the building records. Such records, although unreliable as evidence that asbestos is not present, may show locations where asbestos has been used. The survey of the building records should be followed by a thorough examination of the building or future work area.

The examination should concentrate on walls, ceilings, floors, beams, ducts and other surfaces, including the underside of the roof. Friable insulation may be found on pipes, boilers, tanks, ducts, and rainwater leaders. Pipe and boiler insulation are usually covered with a protective jacket and may not have to be examined unless the work will involve the removal or disturbance of the material.

It is recommended that older ceiling and floor tiles that are 9 inch by 9 inch or larger be examined prior to work that will involve their removal. These tiles are often found to be ACM.

Please refer to Appendix 2 for a list of materials that may contain ACM.

Records and Reports

Are records a required part of an asbestos management program?

Yes. The owner of a building is required to have an asbestos management program in place under certain circumstances as set out in section 8 of the Regulation and maintain a record that contains the information specified in subsection 8(4). The record must be updated at least once every 12 months or when the owner becomes aware of changes to the information contained in the record.

Is a report prior to tendering or arranging for work a requirement?

Yes. Before an owner requests tenders or arranges for demolition, alteration, or repair, the owner must have a report prepared stating whether any material that may be handled, dealt with, disturbed or removed is or is not ACM. This requirement applies whether the material is **friable or non-friable**. Please refer to Chapter 7 of the Guide for more details on Section 10 of the Regulation.

Who must receive copies of the report?

Under subsection 10(5) the owner is required to give a copy of the report, prepared in accordance with the requirements of subsection 10(4), to any prospective constructors. Similarly, under subsection 10(6) the constructor is required to supply a copy of the report to prospective contractors, and these contractors must do the same for prospective subcontractors.

Notifications

The Regulation requires written or written and oral notifications in several situations as described below.

What notifications are required under Section 8?

The owner of a building is obligated to have an asbestos management program in place and to prepare and keep on the premises a record containing the information set out in section 8 of the Regulation.

Subsection 8(3) requires that the owner of the building give written notice to any person who is an occupier of the building of the information in the record that relates to the part of the building that the person occupies. However, since the report required under Section 8 must include both friable and non-friable ACM, some occupiers who did not have to be notified under the requirements of section 7 (pre-November 1, 2007) will now have to be notified under section 8.

In specified circumstances, the owner is also required to give notice of information in the record to an employer with whom he or she contracts or arranges work for.

For example, the owner of an office building who knows or ought to know that pipe insulation in various suites in the building is ACM or that ceiling tiles in the suites are ACM, must give written notice to the occupiers of these suites.

What notifications are required under section 10?

Section 10 sets out the duties of an owner prior to asking for tenders or arranging for the demolition, alteration, or repair of machinery, equipment, or a building, aircraft, locomotive, railway car, vehicle, or ship. It also includes provisions, in subsections 10(7), 10(8), 10(9) and 10(10), for dealing with material that is found during the work and that may be ACM, but is not included in the report required by subsection 10(4). This is commonly referred to as the **unexpected discovery** of ACM or suspected ACM. Subsection 10(8) requires the constructor or the employer to immediately give **written and oral notice** of the discovery to the following individuals or groups: a Ministry of Labour inspector at the office nearest the workplace; the owner; the contractor; and the joint health and safety committee or the health and safety representative for the workplace.

Subsection 10(9) identifies the information that a constructor or employer is required to provide to the Ministry before beginning a Type 3 operation or a Type 2 glove bag operation that involves the removal of one square metre or more of insulation. The details of the requirements for the written notice are found in subsection 11(3).

Section 24 states that written notice can be given to an inspector by delivering it to the office in person, by sending it by ordinary mail, by fax, by courier, or sending it by electronic means that are acceptable to the Ministry. This may include e-mail or reporting options such as E-notification set up on the Ministry website:

(http://www.labour.gov.on.ca/english/site/construction_info.html).

Oral notice can be given in person, by telephone, or by sending the notice to the inspector by electronic means acceptable to the Ministry, such as fax, e-mail, or via the Ministry website.

Where there are several joint health and safety committees or health and safety representatives representing different groups of workers within a workplace, the constructor or employer must notify all joint health and safety committees or health and safety representatives of the unexpected discovery.

What notifications are required under section 11?

Subsection 11(1) requires that the constructor of a project, or the employer in the case of any other work, give written and oral notification to a Ministry of Labour inspector at the office nearest the workplace before starting a Type 3 operation.

Subsection 11(2) states that the constructor of a project or the employer in the case of any other work must notify an inspector orally and in writing before beginning a Type 2 glove bag operation that involves the removal of one square metre or more of insulation.

Subsection 11(3) sets out the information that must be included in the notice:

- the name and address of the person giving the notice;
- the name and address of the owner of the place where the work will be done;
- the municipal address of the place where the work will be done or other description that will allow the inspector to find the place;
- a description of the work;
- the starting date and expected duration of the work; and
- the name and address of the supervisor in charge of the work.

The information can be provided by completing and submitting Notice of Project forms which are available from any Ministry of Labour office or ServiceOntario Centre.

Must the Ministry of Labour Notice of Project (NOP) form be used when submitting notices under section 11?

No. Section 11 requires a constructor/employer to notify the Ministry (in writing and orally) of certain information before commencing a Type 3 operation, or a Type 2 glove bag removal of more than one square metre of insulation that is ACM from a pipe, duct or similar structure. The NOP may be used to submit this information, but the information may also be submitted in the form of a letter, memo, etc., so long as the specified information required by the Regulation is provided.

10. Classification of Work

What does the classification of work determine?

The classification of the work determines what other provisions of the Regulation apply to an operation; for example, notification requirements (section 11), measures and procedures (sections 14, 15, 16, 17, and 18), medical surveillance (section 22), record keeping (sections 21 and 22), and training and certification requirements for workers involved Type 3 operations (section 20). As the classification of the work goes from Type 1 to Type 3, the corresponding requirements of the Regulation become increasingly more stringent. The Regulation does not specify who is to do the classification, but, in most cases, it will be the constructor or employer, often in consultation with an appropriately qualified consultant.

What is the difference between the classifications of work?

The three classifications of operations (Type 1, Type 2 and Type 3) have been established according to the asbestos hazard presented by the work, both to those doing the work and to others outside the work area. They can be thought of as being associated with a low, medium, and high risk of exposure. Activities have been assigned to one of the three types of operations based on an assessment of the risk of exposure. Factors that affect worker exposure to asbestos include the type of asbestos, the type of binder or matrix, the type of work, and the type of control measures used.

What operations fall within Type 1 Operation?

Type 1 operations present the lowest exposure risk, generally including the installation or removal of ACM products that are non-friable, that is, material that is not easily crumbled between the thumb and the fingers, or is not already crumbled. The work must be done without damaging the material, or where the material will be damaged, the spread of fibres must be controlled by wetting the material and using non-powered handheld tools. Type 1 operations include:

- installation or removal of ACM ceiling tiles (less than 7.5 m^2) without damage*;
- installation or removal of non-friable ACM, other than ceiling tiles, without damage;
- breaking, cutting, drilling, abrading, grinding, sanding or vibrating non-friable ACM that is wetted and where the work is done using non-powered hand-held tools; and,
- removal of less than one square metre of drywall where ACM joint-filling compounds were used.

*damage includes breakage, cutting, abrading, grounding, sanding, and vibration.

Examples of Type 1 Operations

Source: Construction Safety Association of Ontario

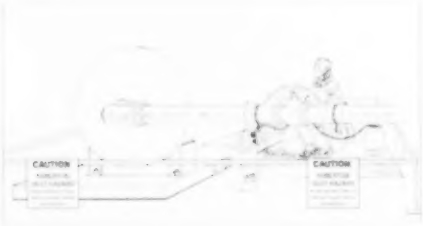
What operations fall within Type 2 Operation?

The following types of operations are classified as Type 2 operations:

- the removal of all or part of a false ceiling to access a work area, if ACM is likely to be lying on the surface of the false ceiling;
- enclosure of friable ACM;
- application of tape, a sealant or other covering to pipe or boiler insulation that is ACM;
- installing or removing ACM ceiling tiles that cover an area of 7.5 m^2 or more if the work is done without damaging the tiles;
- breaking, cutting, drilling, abrading, grinding, sanding, or vibrating non-friable ACM using non-powered hand-held tools if the material is not wetted;
- cleaning or removing filters used in air handling equipment in a building that has sprayed ACM fireproofing;
- removal or disturbance of one square metre or less of friable ACM during the repair, alteration, maintenance or demolition of all or part of machinery or equipment or a building, aircraft, locomotive, railway car; and
- glove bag removals of ACM insulation.

Work that may expose a worker to asbestos and that is not classified as a Type 1 or Type 3 operation, is also to be classified as a Type 2 operation.

Example of Type 2 Operation



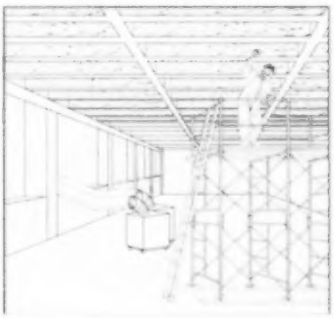
Source: Construction Safety Association of Ontario

What operations fall within Type 3 Operation?

Work with friable or non-friable ACM that has the potential to generate high concentrations of asbestos fibres in air is classified as Type 3. Type 3 operations include:

- removal or disturbance of more than one square metre of friable ACM;
- spray application of a sealant to friable ACM;
- cleaning or removal of air-handling equipment, including rigid ducting but not including filters, in a building that has sprayed ACM fireproofing;
- repair, alteration or demolition of a kiln or furnace made, in part, of refractory materials that are ACM;
- breaking, cutting, drilling, abrading, grinding, sanding or vibrating non-friable ACM with power tools not attached to dust-collecting devices with HEPA filters; and,
- repair, alteration or demolition of a building in which asbestos products were manufactured, unless the asbestos was cleaned up and removed before March 16, 1986.

Example of Type 3 Operation - Removal of more than one square meter of Friable Asbestos



Source: Construction Safety Association of Ontario

What kinds of problems occur in classifying asbestos work?

Problems in classifying asbestos work may arise either because the Regulation does not say how a particular job is to be classified or because there is a dispute regarding the classification of the work. Any work with asbestos that is not mentioned in the Regulation as Type 1 or Type 3 is to be classified as Type 2 (see paragraph 11 of subsection 12(3)). Subsection 12(6) says that disputes regarding the classification of the work can be referred to a Ministry of Labour inspector nearest the workplace of the dispute, by anyone involved in the dispute. The inspector will investigate and provide a written decision. Work on the operation must cease until the inspector has given a decision in writing.

The referral of a dispute to a Ministry inspector does not affect an inspector's power to issue an order for a contravention of the Regulation.

How is work on plaster stucco and other hard finishes that are ACM but not explicitly mentioned in the Regulation classified?

It is the Ministry's position that wetting does not adequately control the spread of dust and fibres during the breaking, cutting, drilling, abrading, grinding, sanding or vibrating of asbestos-containing plaster, stucco and other hard finishes by means of non-powered hand-held tools. As such, Type 1 procedures cannot be used for work on these materials. The work will likely be classified as a Type 2 (subsection 12(3), paragraph 6, subsection 12(3) paragraph 8) or Type 3 (subsection 12(4) paragraph 5) operation depending on the tools used.

11. Procedures

The following chapter does not comprehensively specify all required measures and procedures for the Type 2 and Type 3 operations. For a complete list of requirements, please refer to the Regulation.

What section of the Regulation sets out the measures and procedures to be used when working with ACM?

As the risk to workers increases from Type 1 to Type 3 operations, the protective measures and procedures become increasingly stringent. The measures and procedures to be used in Type 1 operations are set out in section 14. Measures and procedures that are common to Type 2 and Type 3 operations are outlined in section 15. Section 16 sets out additional measures and procedures for Type 2 operations and section 17 deals with glove bag operations. Section 18 sets out the measures and procedures that, in combination with those found in section 15, are to be used in Type 3 operations.

How are the operational procedures broken down?

1. Preparation of the work area;
2. Dust control;
3. Personal protective clothing and equipment; and
4. Clean-up of the work area and waste removal.

Checklists: Checklists of measures and procedures required for each type of operation can be found on the Ministry of Labour web site at http://www.labour.gov.on.ca/english. *The checklists are intended to*

facilitate compliance with the requirements of the Regulation. They are not comprehensive and should not be exclusively relied upon to ensure compliance with regulatory requirements. For the comprehensive requirements, always refer to the Act and the Regulation.

Preparation of the Work Area

How should the work area(s) be prepared?

The following measures and procedures apply to Type 1, 2 and 3 operations:

- A wetting agent must be added to water used to control the spread of dust and fibres.
- Drop sheets must not be reused.
- Barriers and portable enclosures must not be reused unless they are rigid and can be cleaned thoroughly.
- Compressed air must not be used to clean up and remove dust from any surface.
- Eating, drinking, chewing or smoking must not be permitted in the work area.

Type 1 Operations

What are the procedures for conducting a Type 1 operation?

When preparing for a Type 1 operation any visible dust must be removed from surfaces in the work area, including the thing to be worked on, if the dust is likely to be disturbed. The dust is to be removed either with a damp cloth or a vacuum[1] equipped with a high

[1] Whenever dust or debris that might contain asbestos is to be vacuumed, the Regulation requires the vacuum to be equipped with a HEPA filter. Use of a vacuum that is not so equipped may result in hazardous levels of airborne asbestos because ordinary vacuum filters are unable to remove small asbestos fibres, and as a result, these fibres are blown into the air through the vacuum exhaust outlet.

efficiency particulate aerosol (HEPA) filter. Drop sheets made of polyethylene or other suitable material that is impervious to asbestos must be placed so as to control the spread of dust from the work area. Other measures may also be necessary.

Type 2 Operations

What are the procedures for conducting Type 2 Operations?

Before beginning Type 2 operations the work area must be identified by clearly visible warning signs. A sufficient number of signs must be posted to warn of the hazard, they must state in large, clearly visible letters that there is an asbestos dust hazard, and that access to the work area is restricted to persons wearing protective clothing and equipment. Any crumbled, pulverized or powdered ACM that is likely to be disturbed and that is lying on any surface or object in the workplace must be cleaned up and removed. Friable ACM that is not crumbled, pulverized or powdered and that may be disturbed or removed during work, must be wetted and kept wet during the work unless wetting would create a hazard or cause damage.

If the Type 2 operation involves the removal of a false ceiling, it will not be possible to clean the upper surface of the ceiling tiles until at least one ceiling tile has been removed. In this case the friable ACM must be cleaned up and removed as soon as access to the work area, the area above the false ceiling, has been obtained. In some cases the ceiling tiles themselves may meet the definition of ACM, and must be removed and replaced in accordance with the requirements of the Regulation (paragraph 1 of section 16).

Where Type 2 operations involve the removal of all or part of a false ceiling to access the work area above the false ceiling, or the removal or disturbance of one square metre or less of friable ACM where the work is done indoors, the mechanical ventilation system serving the work area must be disabled, where practicable.[2] In addition, the ventilation ducts within the work area must be sealed off. If the work area is not enclosed by walls, then an enclosure of polyethylene or similar material must be constructed, where it is practicable to do so (see Figures below). If the enclosure is opaque, one or more transparent window areas must be provided to allow observation of the entire work area from outside the enclosure.

In the case of glove bag operations, the work area must be separated from the rest of the workplace by walls, barricades, fencing, or other suitable means. The mechanical ventilation system serving the work area must be disabled and all openings or voids, including ventilation ducts, must be sealed off to separate the work area from other parts of the workplace. Surfaces below the work area must be covered with drop sheets made of polyethylene or some other suitable material that is impervious to asbestos. The insulation jacketing or coating is to be inspected for damage or defects and repaired before the glove bag is attached. The glove bag must be inspected for damage or defects before it is attached to the pipe or duct and at regular intervals during its use.

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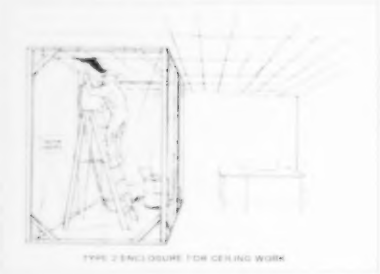
[2] It is important to note the different meanings of the terms "practicable" and "practical". The Regulation requires the disabling of the ventilation system and the erection of an enclosure, **where practicable**. "Practicable" means possible. What the Regulation is saying, then, is that if it can be done then it must be done. But being able to do something does not make it useful in practice. While it may be practicable to shut down the ventilation system in a building in order to work in one small area of it, it may not be practical to do so, at least while the building is occupied. If there is no practicable way to comply with the Regulation, it may be necessary to use the provisions of section 23 to vary the measures and procedures used during the work. In this case the varied measures and procedures must provide protection to the worker that is equal to the protection that would be provided by following the measures and procedures set out in the Regulation.

Enclosures for Type 2 Operations



Source: Construction Safety Association of Ontario

Type 3 Operations

What are the procedures for conducting Type 3 Operations?

Type 3 operations are divided into work involving friable ACM and work involving non-friable ACM. The Regulation sets out measures and procedures for preparing the work area that are common to all Type 3 operations. In addition, the Regulation specifies additional procedures for operations involving work on friable ACM and for operations involving work on non-friable ACM. All Type 3 operations must be identified by signs that warn of the asbestos hazard. The signs must be posted in sufficient numbers to warn of the hazard and must also state, in large, clearly visible letters, that access to the work area is restricted to persons wearing protective clothing and equipment. The work area must be separated from the rest of the workplace by walls, the placing of barricades or fencing or other suitable means.

Where wet removal of asbestos is to be carried out, electrical safety is an important consideration. The use of wet methods increases the potential for electrical shock when working around electrical panels, conduits, light fixtures, junction boxes and other electrical items. Where practicable, existing electrical power distribution systems that are not watertight must be de-energized and locked out before work begins.

Where this is not practicable, it is recommended that dry removal methods be used in areas immediately adjacent to energized equipment.

If a temporary power system has to be set up to operate tools and equipment, it must be equipped with a ground fault circuit interrupter meeting the requirements of the Electrical Safety Authority (ESA).

Working with friable ACM

What are the preparation procedures for Type 3 Indoor Operations that are described in paragraphs 1, 2, 3, 4, and 6 of subsection 12(4)?

Before any of these operations are carried out indoors, friable ACM that is crumbled, pulverized or powdered and is lying on any surface in the work area, including furniture, flooring, equipment, machinery and so on, must be cleaned up and removed using a vacuum equipped with a HEPA filter or by damp wiping. Everything must be removed from the work area or covered with polyethylene sheeting or other suitable material that is impervious to asbestos. The ventilation system must be shut down and all vents, air ducts and other openings to or from the work area, sealed. This can be done with polyethylene or other impervious material, and duct tape. Polyurethane foam may be useful to seal areas that are difficult to tape.

Where the work area is not enclosed by walls it must be isolated by constructing an enclosure made of polyethylene or other suitable material to prevent the spread of dust from the work area. Even where the work area is enclosed by walls it may be advisable to line the walls and floors with polyethylene sheeting to facilitate the clean-up and to prevent damage to architectural finishes.

What are the requirements of the decontamination facility?

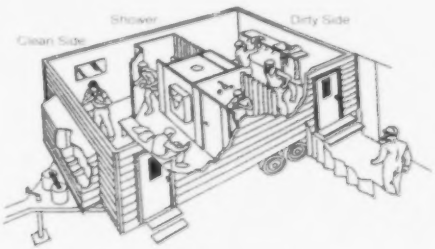
A decontamination facility must be built so that anyone entering or leaving the enclosed work area must pass through each room of the decontamination facility.

The decontamination facility must consist of at least three interconnecting rooms:

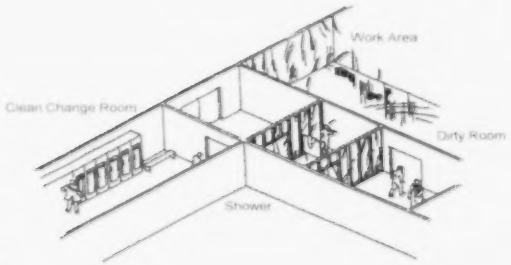
- a clean room,
- a shower room, and
- an equipment room.

Two typical decontamination facilities are shown below. The doorways between rooms in the decontamination facility must be fitted with curtains of polyethylene or other suitable material on each side so that they will close behind workers as they pass through the doorways. This is to minimize the spread of asbestos fibres from the work area.

Decontamination Facilities



Portable Decontamination Trailer



Source: Construction Safety Association of Ontario

Typical Decontamination Facility

Clean Room: This room is to be used for changing into uncontaminated protective clothing, putting on respiratory equipment, storing clean clothing and, after showering, for dressing in street clothes. No asbestos-contaminated items are allowed in this room. The clean room could be furnished with benches, lockers for clothes and valuables, and suitable storage for respirators.

Shower Room: The shower room should be located between the clean room and the equipment room. This will ensure that workers leaving the contaminated equipment room must pass through the shower room in order to enter the clean room. A temporary shower can be installed using prefabricated shower stalls with catch pans and sump pumps. Hot and cold water supplies should be available nearby in most buildings. For hot water lines, it is recommended that high quality rubber hose be used to prevent bursting and leakage. The shower must be supplied with both hot and cold water or with warm water of a constant temperature between 40° and 50° Celsius. The shower must have individual controls to regulate the water flow and, if there is hot and cold water, to regulate the temperature.

It is recommended that there be sufficient showers to avoid delays. Having to wait for access to a shower could cause some individuals to rush through the decontamination procedure or to skip it altogether. The shower room must also be equipped with clean towels.

Equipment Room: Contaminated work clothes, footwear, hard hats, goggles and other equipment should be stored in an area adjacent to the shower room. This area is also to be used for workers to remove contaminated clothing prior to entering the shower.

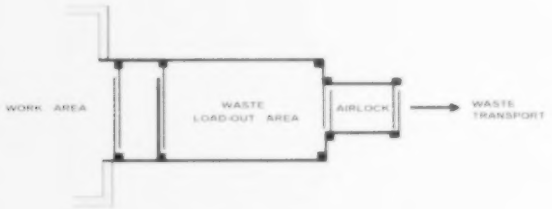
The rooms should be arranged so that any person passing through the work area must pass through each room and must:

- decontaminate his or her protective clothing using the vacuum or damp wiping;
- remove his or her protective clothing;
- place the protective clothing in the prescribed container;

- shower; and,
- remove and clean the respirator.

Waste Removal: Although not required by the Regulation, it may be desirable to construct a waste load-out area to transfer asbestos-containing waste from the work area for eventual disposal at a landfill. The waste load-out area consists of a room built into the enclosure, but separated by airlocks from the work area and the area outside the enclosure as shown below.

Curtained doorways made from overlapping sheets of polyethylene or other impervious materials are used to form the air locks. Waste containers are cleaned by damp wiping or use of a HEPA vacuum in the work area and then placed in the waste load-out area. When a load has accumulated, the room can be sealed off from the work area and the waste transferred to a truck for transport to a landfill.



Example of a Waste Load out Area

The disposal of asbestos waste is governed by Regulation 347, General – Waste Management, made under the *Environmental Protection Act*.

What are the procedures for working with ACM for Type 3 Operations Outdoors that are described in paragraphs 1, 2, 3, 4 of subsection 12(4)?

Where Type 3 operations involving friable ACM are carried on outdoors, enclosures are not required and the work area must be separated from the surrounding area by barricades, fencing or other

means (see below). Steps must be taken to ensure that dust and waste cannot fall freely from one level to another. This may include the use of drop sheets made of polyethylene or other material that is impervious to asbestos on work surfaces. Care should be taken to ensure that the material used does not create a slipping hazard that may put workers at risk of falling.

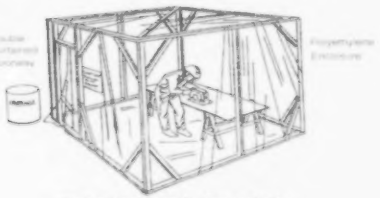
Removal of Asbestos Outdoors

Source: Construction Safety Association of Ontario

Construction of a Decontamination Facility: A decontamination facility must be located as close as practicable to the work area. The decontamination facility must consist of a room suitable for changing into protective clothing and for storing contaminated protective clothing and equipment; a shower room; and a room suitable for changing into street clothes and for storing clean clothes and equipment. The decontamination facility must be constructed so that any one entering or leaving the work area must pass through each room. Customized trailers outfitted with three room decontamination facilities are available for use as decontamination facilities. These units can be moved from one work site to the next and are commonly used for outdoor work.

What are the procedures when working with Non-Friable ACM described in paragraph 5 of subsection 12(4)?

Operations involving non-friable ACM include cutting of transited pipe, removal of asbestos-containing ceiling texture, plaster, drywall compound and roofing materials. For work on non-friable ACM that is done with power tools that are not attached to dust-collecting devices equipped with HEPA filters, an enclosure of polyethylene or other suitable material must be constructed, unless walls already enclose the work area. The entrances and exits to the enclosure must be fitted with curtains made of polyethylene or other suitable material that is impervious to asbestos, on each side (see below) and, if the enclosure is opaque, it must be fitted with one or more transparent windows to allow observation of the entire work area from outside the enclosure. These requirements apply whether the work is done **indoors or outdoors**. The construction of an enclosure is discussed in the previous section dealing with preparation for indoor Type 3 operations involving ACM that are described in paragraphs 1, 2, 3, 4 and 6 of subsection 12(4).



Work with Power Tool Not Equipped with Dust Collection Device and HEPA Filter

Source: Construction Safety Association of Ontario

Dust Control

There are three aspects to the control of asbestos dust:

- control at the source;
- separation between the worker and the source; and
- hygiene measures and procedures.

Control at the Source

Wetting, the use of drop sheets or enclosures, local exhaust ventilation and the maintenance of negative air pressure within enclosures are some of the measures and procedures used to prevent the spread of asbestos dust by control at the source.

Wetting: Keeping ACM wet tends to reduce the number of asbestos fibres that get into the air and also increases the settling rate of the fibres that are released. The Regulation requires that a wetting agent be added to water that is used to control the spread of dust and fibres.

The Use of Drop Sheets and Enclosures: Drop sheets made of polyethylene or other suitable material that is impervious to asbestos can be used in Type 1 operations or in some Type 2 operations to prevent the spread of dust from the work area. Enclosures made of polyethylene or other material that is impervious to asbestos must be used on some Type 2 and Type 3 operations to stop the spread of dust from the work area if the work area is not enclosed by walls.

Use of Local Exhaust Ventilation: In most indoor Type 3 operations, the generation of airborne asbestos fibres must also be controlled by installing a ventilation system equipped with HEPA filters and by establishing and maintaining a negative air pressure of 0.02 inches of water.

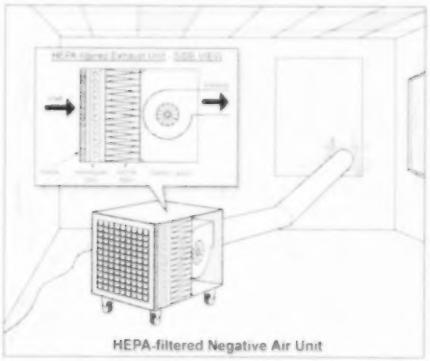
Maintenance of Negative Air Pressure: The maintenance of negative air pressure within the enclosure relative to the area outside the enclosure helps to prevent the spread of fibres and is a requirement for indoor Type 3 operations. Since the negative air unit exhausts air

from the enclosure through a HEPA filter, it also helps to reduce airborne asbestos concentrations within the enclosure. Negative air is also required for some indoor Type 3 operations involving friable materials.

What are the requirements of the ventilation system?

A ventilation system equipped with a HEPA filtered exhaust unit must be installed inside the enclosure required for all indoor Type 3 operations. This system must be used to create and maintain a negative air pressure of 0.02 inches of water relative to the area outside the enclosure. The negative air requirement is not required for situations where a building will be demolished and will only be entered by workers involved in the asbestos operation and by demolition workers. The replacement air and air pressure must be checked at regular intervals to ensure there are no leaks.

HEPA-filtered Negative Air Unit



HEPA-filtered Negative Air Unit

Source: Construction Safety Association of Ontario

For Type 1 Operations

When a Type 1 operation involves the removal of less than one square metre of drywall in which ACM joint-filling compound has been used, the material must be wetted and kept wet during the work, unless wetting would create a hazard or cause damage.

Breaking, cutting, drilling, abrading, grinding, sanding or vibrating non-friable ACM can only be classified as a Type 1 operation if the material is wetted or if the work is done by means of non-powered hand-held tools. In all Type 1 operations, the spread of dust from the work area must be controlled by the use of drop sheets of polyethylene or other suitable material, or by other measures specified in section 14 of the Regulation.

For Type 2 Operations

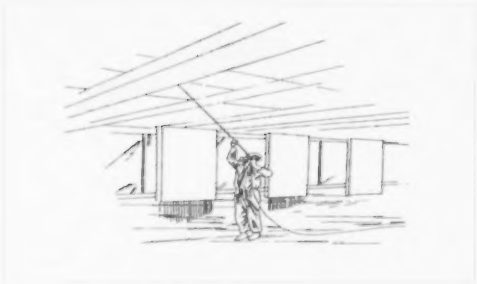
Friable ACM that is not crumbled, pulverized or powdered and that may be disturbed or removed during the work must be thoroughly wetted before the work begins and must be kept wet during the work. The only exception is when wetting would create a hazard or cause damage.

In Type 2 operations involving the removal of all or part of a false ceiling where ACM is likely to be on the surface of the ceiling and the removal or disturbance of one square metre or less of friable ACM, the mechanical ventilation system serving the work area must be disabled and all openings or voids, including ventilation ducts, must be sealed. This will help to prevent the spread of asbestos fibres outside the work area.

Where appropriate, the spread of dust must be controlled by measures appropriate to the work, including the use of drop sheets or other suitable material made of material that is impervious to asbestos

In the case of Type 2 operations involving work above a false ceiling or work involving the removal or disturbance of one square metre or less of friable ACM, the work area must also be surrounded by an enclosure made of polyethylene or other suitable material impervious to asbestos, where practicable. Unless the enclosure is made of transparent material it must be equipped with a window or windows that will allow anyone to view the entire enclosure from the outside. Glove bags serve to control asbestos dust and waste at the source by containing the wetted ACM during the removal and by containing the waste. Surfaces below a glove bag operation must also be covered with a drop sheet.

Worker wetting ACM



Source: Construction Safety Association of Ontario

For Type 3 Operations

The Regulation requires that, before ACM is removed indoors, the work area must be enclosed and a decontamination facility set up, as described previously. This applies to all indoor Type 3 operations, including when the operation described in paragraph 5 of subsection 12(4) is carried on indoors. The friable ACM must be thoroughly wetted and kept wet throughout the removal, unless this would create a hazard or cause damage. Dust and waste must also be kept wet if practicable.

The Regulation requires that a competent worker inspect the work area at the start of each shift, at the end of each shift, unless the next shift starts immediately, and at least once on days when there are no shifts. The purpose of the inspection is to find any defects such as tears or damaged seams in the enclosure, the barriers, and the decontamination facility.

In some Type 3 operations, unless the building will be demolished and will only be entered by asbestos abatement and demolition workers, the spread of dust from the work area must be prevented by maintaining a negative air pressure of 0.02 inches of water relative to the area outside the work area. For some Type 3 operations, subsections 18 (2) paragraph 2 and 18 (4) paragraph 5 require that a ventilation system equipped with a HEPA filtered exhaust unit be

used to create and maintain the specified negative air pressure. The pressure difference must be measured frequently and at regular intervals and the ventilation system used to maintain the negative air pressure must be inspected and maintained by a competent worker before each use. Replacement air taken from outside the enclosed area must not be contaminated with any hazardous dust, vapour, smoke fume, mist or gas. The purpose of the inspection and maintenance requirement is to ensure that there is no air leakage, either through the filters or around any part of the equipment. If, during the course of the inspection, the filter is found to be damaged or defective, it must be replaced before the ventilation system is used.

The ventilation system that is used to maintain the enclosed area at negative pressure must be inspected and maintained regularly by a "competent worker" before each use.

The use of negative air pressure offers several advantages. If the enclosure is torn, air will leak into, rather than out of the work area. This minimizes the risk of asbestos contamination outside of the enclosure. The concentration of airborne fibres in the work area will be reduced as contaminated air is filtered and exhausted. The circulation of fresh air through the work area may help to control temperature and relative humidity inside the enclosure, possibly improving worker comfort and reducing the risk of excessive exposure to heat inside the enclosure.

In all Type 3 operations the work area must be separated from the rest of the workplace by barriers, fences, or other suitable means. In outdoor Type 3 operations described in paragraphs 1, 2, 3, and 4 of subsection 12(4) of the Regulation, any ACM that is to be removed must be wetted, if practicable, and kept wet during the removal. Dust and waste must not be allowed to fall from one level to another. For example, it may be necessary to cover or enclose scaffolding to ensure that material cannot fall down to lower levels.

Type 3 operations that are done on non-friable ACM using power tools that are not attached to a dust-collector equipped with a HEPA filter must be done in enclosures, unless the work area is enclosed by walls. **The requirement for an enclosure applies whether the**

work is done indoors or outdoors (subsection 18(2). If the enclosure is made of non-transparent material, one or more transparent windows must be added to the enclosure so that the entire work area can be seen from outside the enclosure. The windows can be constructed of break resistant plastic set in wooden frames and incorporated into the framework of the enclosure. Entrances and exits to the work area must be fitted with plastic sheets on each side.

If the work is done indoors in a building that will not be demolished, the area inside the enclosure must be kept at a negative air pressure of 0.02 inches of water relative to the area outside the enclosure. The equipment used to maintain the negative pressure must be inspected before and during the work and testing must be done to ensure that the pressure difference is maintained during the work.

If the work is done outdoors or inside a building that will be demolished, and that will only be entered by asbestos abatement and demolition workers, the maintenance of negative air pressure is not required.

Separation between the worker and the source

The use of barriers, fences, enclosures and glove bags helps to control asbestos exposure by separating workers from the source of asbestos dust and fibres. Restricting access to the work area keeps persons not involved in the work from being exposed to asbestos or spreading fibres outside the work area. The requirement for clearance air testing at the end of indoor Type 3 operations involving the removal of ACM that is described in paragraphs 1, 2, 3, 4, and 6 of subsection 12(4) ensures that workers who enter the area following the removal are not exposed to asbestos fibres.

For Type 1 Operations

Type 1 operations require controlling the spread of dust through appropriate measures including the use of drop sheets that are impervious to asbestos. Depending upon the nature of the work, barriers and portable enclosures may also be used. Although it is not

a regulatory requirement, it is recommended that workers who are not carrying out the Type 1 operation be excluded from the work area until the work has been finished and the area cleaned up and all dust and waste removed.

For Type 2 Operations

Signs warning of an asbestos hazard must be clearly visible for all Type 2 operations and access must be restricted to workers who are wearing protective clothing and equipment. It is recommended that barriers and portable enclosures be used to separate the work area from other areas

Ventilation requirements specified in paragraphs 1 and 2 of subsection 12(3) help to ensure that workers in other parts of the workplace are not exposed to asbestos. In addition, the Regulation also requires a polyethylene enclosure if the work area is not enclosed by walls and the operation is being carried on indoors.

Certain types of Type 2 operations specified in paragraphs 1 and 2 of section 12(3) require a polyethylene enclosure if the work area is not enclosed by walls and the operation is being carried on indoors.

The use of glove bags for the removal of friable ACM serves to protect both the workers involved in the operation and other workers by separation from the source of potential exposure to asbestos.

Work areas where Type 2 glove bag operations are being carried out must be separated from the rest of the workplace by walls, barricades, fencing or some other suitable warning means.

For Type 3 Operations

Work areas where Type 3 operations are being done must have clearly visible warning signs and access restricted to workers wearing protective clothing and equipment. The work area must be separated from the rest of the workplace by walls, barricades, fencing, or other means that are suitable in the circumstances.

Indoor Type 3 operations mentioned in subsection 18(4) require the use of a polyethylene or other suitable enclosure unless walls enclose the work area. Negative air pressure must be maintained inside the enclosure unless the building will be demolished and will only be entered by workers involved in the removal or by demolition workers. For Type 3 operations involving ACM described in paragraphs 1, 2, 3, 4, and 6 of subsection 12(4) a decontamination facility is required. Inspection and maintenance of the negative air unit, regular measurement of the negative air pressure, and regular inspections of the work area (specifically the enclosure, barriers and decontamination facility) are regulatory requirements that help to reduce airborne asbestos fibre concentrations inside the enclosure.

All Type 3 operations require separation between the work area and the rest of the workplace using walls, barricades, fencing or other suitable means. On many outdoor projects fencing or barricades will be sufficient to keep unprotected workers well away from the work area, and the use of wet methods and washing the area after the removal will help to prevent the spread of dust and fibres. In the case of a multilevel work area in an outdoor Type 3 operation described in paragraphs 1, 2, 3, and 4 of subsection 12(4), such as a removal on the side of a building that requires the use of scaffolding, the different work levels must be separated so that dust and waste will not fall freely from one level to another.

As previously discussed, all Type 3 operations where non-friable ACM is broken, cut, drilled, abraded, ground, sanded, or vibrated using power tools not attached to HEPA filtered dust-collectors require the use of a polyethylene or other suitable enclosure. If the work is done outdoors or if it is done in a building that will be demolished and will only be entered by the workers doing the asbestos removal or by workers involved in the demolition, then negative air pressure does not have to be maintained inside the enclosure. If the work is done in a building that will not be demolished or that will be entered by other workers prior to demolition then the enclosure must be kept at negative air pressure relative to the area outside the enclosure.

Hygiene Measures and Procedures

The Regulation also prescribes hygiene practices and procedures to protect workers, including washing or shower facilities, decontamination of personal protective clothing and equipment, the prohibition of eating, drinking, chewing and smoking, and the strict separation of clean and contaminated clothing and equipment.

For Type 1 Operations: Facilities for washing the hands and face must be provided for workers and the workers must use them when leaving the work area.

For Type 2 Operations: The worker must decontaminate protective clothing and barriers and enclosures using a HEPA vacuum or damp wiping before removing the clothing and leaving the work area. Facilities for washing the face and hands must be provided and every worker must use these facilities as they leave the work area.

For Type 3 Operations: Workers who are carrying out Type 3 operations described in paragraphs 1, 2, 3, 4 and 6 of subsection 12(4) must pass through a decontamination facility as they leave the work area. The decontamination facility, which must consist of a room for changing into protective clothing and equipment and for storing contaminated clothing and equipment, a shower room, and a room for storing clean clothing and equipment and changing into street clothes, is described in detail in the "Preparation of the Work Area" section of this Chapter. If the work is done outdoors the decontamination facility must be set up as close as practicable to the work area. If the work is done indoors the decontamination facility must be located so that the workers must go through it to enter and leave the work area. However, in some circumstances it may be necessary for the employer to use the provisions of section 23 to vary the methods and procedures set out in the Regulation to set up a remote decontamination facility. This is often necessary in facilities like electric generating stations where the physical layout of the work area may not accommodate a decontamination facility.

Where a decontamination facility has been provided, the following procedure must be followed by every person leaving the work area. All protective clothing (coveralls, boots and head covering) and all protective equipment (hardhat, safety goggles) except the respirator is removed in the equipment room. The worker then enters the shower, rinses the face piece of the respirator and then removes the respirator.

If a powered air purifying respirator is worn, it is recommended that you take steps to keep the filters dry and the filter unit and power pack should be wet wiped rather than placed under the shower. It is also recommended that non-powered respirators be thoroughly washed and, in the case of a filter respirator, the filter cartridges soaked in the shower and disposed of on the dirty side of the shower. The worker then exits the shower from the clean side, with the respirator, and dons street clothes or a new set of coveralls that are stored in the clean room.

Workers who are carrying out Type 3 operations must decontaminate their protective clothing and equipment using damp wiping or a HEPA vacuum before removing it and leaving the work area. Facilities for washing the hands and face must be provided and every worker must use these facilities when leaving the work area.

Personal Protective Clothing and Equipment

The personal protective clothing and equipment required by the Regulation consists of respirators, to control the exposure of workers in the work area, and protective clothing, to protect workers from secondary exposures and to prevent workers from transporting asbestos from the work area. To be effective, respirators and protective clothing must be selected and used, cleaned and removed correctly.

Respirators *For more information on respirators see Chapter 12*

Respirators approved by the National Institute for Occupational Safety and Health (NIOSH) may be used in Type 1 operations if the

worker requests them and are required for Type 2 and Type 3 operations. Table 2 of the Regulation (see Chapter 12) summarizes the respirator requirements for Type 1, Type 2, and Type 3 operations.

Protective Clothing

Protective clothing must be provided by the employer to all workers who work on Type 2 or Type 3 operations and to workers involved in a Type 1 operation if requested by the worker. The requirements for protective clothing are set out in paragraph 12 of section 15 of the Regulation. It must:

- be made of material that does not retain or permit the penetration of asbestos fibres,
- include suitable footwear and a head covering, and
- include a full body covering that fits snugly at the wrists, ankles and neck.

Disposable coveralls that meet these requirements are available and are widely used in asbestos work. They can be easily torn, however, and must be repaired or replaced when this happens. The choice of suitable footwear is dependent on the type of work. High top rubber boots are ideal for wet removal work, and are available as safety footwear. Conventional safety boots or safety shoes may be more appropriate for other types of work. The head covering may be a hood attached to coveralls or a separate cap. If the job requires a hardhat, it should be worn over the head covering.

Once the work area has been entered, a worker must not leave it without decontaminating the protective clothing. This must be done with a vacuum equipped with a HEPA filter or by damp wiping. Protective clothing, once contaminated, must not be worn outside the work area. Protective clothing that will not be reused must be placed in the type of container prescribed in paragraph 5 of section 15.

Clean-up of the Work Area and Waste Removal

Cleanup of the work area continues throughout the operation beginning shortly after the start of work. For all types of operations the Regulation requires that all dust and waste are to be cleaned up and removed at frequent and regular intervals as the work proceeds and immediately upon completion of work. This must be done with a vacuum equipped with a HEPA filter or by damp mopping or wet sweeping. Compressed air must never be used to remove dust from any surface.

Containers for dust and waste must be:

- Dust tight
- Suitable for the type of waste
- Impervious to asbestos
- Identified as asbestos waste
- Cleaned with a damp cloth or vacuum equipped with a HEPA filter before being removed from the work area.

In addition to the prescribed requirements for asbestos waste containers, you may wish to consider the following:

Plastic bags with appropriate labels are commercially available. It is advisable that plastic bags be placed in large fibre drums for transport. Large bins can be lined with material that is impervious to asbestos and used to transport waste that is heavy or would tear bags.

The disposal of asbestos waste is covered by Regulation 347, General – Waste Management, made under the *Environmental Protection Act*. Asbestos waste must be handled by an appropriately licensed waste hauler and the disposal site should be notified prior to delivery of the waste so that necessary preparations can be made to receive the material. For clarification of waste disposal requirements under this Regulation, please contact the local office of the Ministry of the Environment.

Polyethylene sheeting and similar materials used for drop sheets and enclosures **must not** be reused. When the work is complete they must be wetted and placed in an asbestos waste container as prescribed by the Regulation.

Barriers and portable enclosures must not be reused unless they are rigid and can be thoroughly cleaned. The cleaning must be done by damp wiping or using a HEPA vacuum. In Type 2 and 3 operations, this cleaning must be done after paragraphs 6 and 8 of section 15 have been complied with. These paragraphs address the cleanup of dust and waste and the wetting and disposal of polyethylene and similar sheeting.

If, during a Type 2 glove bag operation, the glove bag is found to be damaged or defective the use of the glove bag must be discontinued. In addition, the inside of the bag and its contents must be wetted and discarded in an appropriate asbestos waste container. The work area must also be cleaned with a vacuum equipped with a HEPA filter before work is resumed.

The final clean-up and clearance air testing is the most critical phase of Type 3 operations involving ACM that are done indoors and described in paragraphs 1, 2, 3, 4 and 6 of subsection 12(4). If not done properly, future occupants of the building may be exposed to hazardous levels of airborne asbestos fibres. The procedures for clearance air testing are prescribed in subsections 18(5) to 18(9). Subsection 18(4) paragraph 5 of the Regulation requires that the enclosed area must be kept at a negative pressure of 0.02 inches of water relative to the area outside the enclosure.

It is recommended that surfaces from which asbestos insulation has been removed should be brushed to loosen any remaining material and wiped or vacuumed clean. A water-based sealant can be applied to encapsulate any fibres that remain. The work area, the inner surface of the enclosure, and the tools and equipment must be cleaned by a thorough washing or by vacuuming with a vacuum equipped with a HEPA filter and a visual inspection done. Equipment, tools and other items must be cleaned by damp wiping or using a HEPA

vacuum and placed in a container suitable for holding asbestos waste before being removed from the work area.

A competent worker must then inspect the work area and the enclosure to ensure that all visible dust, debris or residue that may contain asbestos has been removed. The purpose of the visual inspection is to ensure that any visible dust or debris or residue that might contain asbestos has been removed. The American Society for Testing and Materials (ASTM) Standard E 1368 – 05 Standard Practice for Visual Inspection of Asbestos Abatement Projects can be used as guidance for carrying out a visual inspection.

Once the work area has dried, a competent worker must carry out clearance air testing, unless the work has been done in a building that will be demolished and will only be entered by workers involved in the asbestos abatement or by demolition workers.

In the circumstances in which clearance air testing is required, the barriers, enclosure and decontamination facility must not be dismantled until the work area has passed the clearance air test.

In those circumstances in which clearance air testing is not required, the barriers, enclosures and the decontamination facility must not be dismantled until they have been cleaned as prescribed in paragraph 15 of subsection 18(4).

Upon passing the clearance air test or completing paragraph 15 of subsection 18(4) the enclosure and decontamination facility can then be dismantled.

Polyethylene or other similar sheeting used to construct the enclosure must be wetted and disposed of as asbestos waste in the prescribed container.

Where a Type 3 operation involving ACM described in paragraphs 1, 2, 3 and 4 of subsection 12(4) has been done outdoors, the work area is to be washed down after the job is completed, unless it is not practicable to do so after the cleanup and removal of dust and waste described in paragraph 6 of Section 15.

12. Respirators

By its nature asbestos operations take place under conditions where permanent engineering controls cannot be used to protect workers. Construction, renovation, and demolition projects, for example, are constantly changing and the work is often done under physically challenging conditions. Maintenance and repair work is intermittent and the use of permanent engineering controls is not usually practicable. Instead, reliance is placed on temporary measures, such as enclosure of, and restricted entry to, the work area, the maintenance of negative air pressure within the work area, and the use of personal protective clothing and equipment.

Respirators play a very important role in the protection of workers, and it is essential that both workers and employers understand how to use them properly.

The respirator requirements for Type 1, Type 2, and Type 3 operations are summarized in Table 2 of the Regulation. There is also a very easy-to-use chart available at the Construction Safety Association of Ontario's website at:

http://www.csao.org/Uploadfiles/Magazine/CS_Autumn06.pdf

All respirators must be approved by the U.S. National Institute for Occupational Safety and Health (NIOSH). The Regulation permits the use of both air-purifying and supplied air respirators, depending upon the work being performed. Powered air purifying respirators (PAPRs) are commonly used types of respirators in Type 2 and Type 3 operations. Supplied air respirators are used for dry removals or removals of sprayed on insulation containing asbestos other than chrysotile.

What are the Types of Respirators?

Respirators fall into one of two general categories: air purifying and supplied air.

Half-Face Mask

This style is widely used with air-purifying respirators and with some supplied air systems.

Full Face Mask

Full face masks can be used with air-purifying, powered air-purifying and supplied air respirators. They cover the entire face and provide more protection than other face masks.

Air-Purifying Respirators

Air-purifying respirators use filters, cartridges, or canisters to remove particulate, vapour and/or gas contaminants from the air. This type of respirator may be equipped with powered or non-powered half or full-face masks, or powered helmets or hoods. If an air-purifying respirator is used, it must be suitable for protection against asbestos. An N-100, P-100, or R-100 or HEPA filter is required.

Non-powered respirators depend upon the breathing action of the wearer. This can result in negative pressure within the face piece and the inward leakage of contaminated air. There may also be noticeable resistance to inhalation, which can make these respirators difficult to wear for long periods of time or in hot environments.

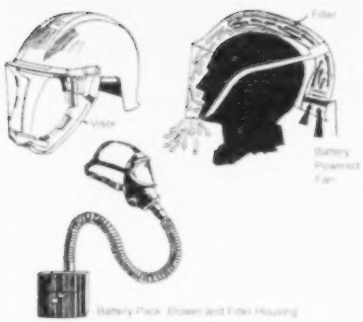
These problems can be overcome by using a powered respirator. Powered air purifying respirators (PAPRs) contain a blower that passes the contaminated air through a filter and supplies filtered air at positive pressure to the face piece, hood or helmet. PAPRs are not supplied air respirators.

Supplied Air Respirators

Supplied air respirators, as the name implies, provide clean air from an independent source either carried by the user (self-contained breathing apparatus or SCBA) or delivered to the user through an air supply line or hose.

Supplied air respirators can receive air from a compressed air source or an ambient air blower. They can be equipped with a variety of face pieces: half or full-face pieces, helmets or hoods, although the Regulation specifies that tight-fitting half or full-face pieces be used, depending upon the work. They may supply air only on "demand" or as a continuous flow. Leakage is a problem with demand devices because inhalation creates a negative pressure that allows contaminated air to enter the face piece. Continuous flow and pressure demand devices create a positive pressure within the mask that is independent of the wearer's breathing, although there is a risk that workers may create a negative pressure inside the face piece during extreme exertion.

The Regulation requires that negative pressure or demand supplied air respirators be equipped with a full face piece, while continuous flow supplied air respirators may be equipped with tight fitting half or full face pieces. The use of pressure demand supplied air respirators equipped with a full face piece is allowed during Type 3 operations involving non-friable ACM, and equipped with a half-mask (please see Table 2 in the Regulation) during Type 3 operations involving the wet removal of friable, sprayed on ACM that contains a type of asbestos other than chrysotile. Pressure demand supplied air respirators used during the dry removal of friable ACM must be equipped with full face pieces. To minimize the inward leakage of contaminated air, a minimum air flow must be maintained; six cubic feet per minute (170 L/min) for loose-fitting hoods or helmets and four cubic feet per minute (130 L/min) for tight-fitting face pieces.



Powered Air Purifying Respirators which can be used in Type 1 and some Type 2 operations

Source: Construction Safety Association of Ontario

Respirator Fit

Subsection 13(1) (a) requires that respirators used in Type 1, 2 and 3 operations be fitted so that there is an effective seal between the respirator and the worker's face unless the respirator is equipped with a hood or a helmet. In general, this means that the respirator must be of an appropriate size for the worker's face and that facial hair and scars or other irregularities must not interfere with the seal and that these devices are not to be worn unless the worker has passed an appropriate qualitative or quantitative fit test.

Are there different methods to test the fit of respirators?

There are two methods of testing the fit of respirators. One is "qualitative", where simple tests are used to check for signs of leakage; the other is "quantitative", where tests actually measure the leakage using special instrumentation. There are also procedures for field checking and testing of the respirator seal.

Appendix B of the Canadian Standards Association (CSA) Standard Z94.4-02, Selection, Use, and Care of Respirators lists four protocols for Qualitative Respirators Fitting Tests:

- isoamyl acetate protocol;
- saccharin solution aerosol protocol;
- bitter aerosol protocol; and
- irritant smoke protocol.

Positive and Negative Pressure User Seal Checks

Negative-pressure and positive-pressure user seal checks are conducted on tight-fitting electrometric face pieces to check the respirator seal in the field. These two test procedures are outlined in CSA Standard Z94.4-02, Appendix A. They are simple and quick, and can be performed by the wearer to check the respirator fit at any time during a work shift. The positive-pressure test is conducted by covering the exhalation valve, usually located on the bottom of the respirator, with the palm of the hand and exhaling gently. The face piece should puff slightly away from the face without allowing air to escape. The negative-pressure test involves covering the air inlets and then inhaling. A slight collapse of the face piece with no air leakage indicates a satisfactory fit.

Positive and Negative Pressure Fit Checks

Source: Construction Safety Association of Ontario

Respirator Maintenance

Respirators must be maintained in good operating condition if they are to be effective. The maintenance program should follow the

manufacturer's instructions and include provisions for the following use:

- Cleaning and disinfection;
- Inspection and maintenance;
- Storage;
- Replacement of damaged/deteriorated parts; and
- Proper fit.

Written Procedures

Respirators must be selected, used and maintained following written procedures that are put in place by the employer and these procedures must be consistent with the manufacturer's specifications.

Subsection 13(3) of the Regulation requires the employer to establish written procedures for the selection, use and care of respirators. A copy of these procedures is to be given to and reviewed with every worker who is required to wear a respirator.

Cleaning and Disinfection

The Regulation requires that respirators be cleaned and disinfected after use on each shift, or more often if necessary, if they are used exclusively by one worker. They must be cleaned and disinfected after each use if they are used by more than one worker.

Inspection and Repair

After being cleaned and disinfected, each respirator must be inspected to determine if it is in proper working condition. Where the inspection indicates that parts are damaged or deteriorated, they must be replaced before the respirator is used again.

Storage

The Regulation requires respirators that are not in use to be stored in a clean, convenient, and sanitary location. The storage area should protect the equipment from dust, sunlight, heat, extreme cold, excessive moisture and damaging chemicals. It is recommended that individual respirators be placed in plastic bags or closed containers and stored in a manner that will prevent distortion of rubber or plastic parts.

Breathing Air Requirements

Subsection 13(2) sets out the requirements for breathing air that is used with supplied air respirators. Compressed breathing air must meet the standards set out in Table 1 of CSA Standard Z180.1-00, Compressed Breathing Air and Systems. If an oil-lubricated compressor is used to supply breathing air, a continuous carbon monoxide monitor equipped with an alarm must be provided. An audible alarm is preferred. If an ambient breathing air system is used the air intake must be located in accordance with Appendix B of CSA Standard Z180.1-00, Compressed Breathing Air and Systems. The intake must be located in a clean area outdoors away from vehicle and building exhausts.

Training

Section 19 outlines the duties of an employer with regard to worker instruction and training, including the use of respirators. Subsection 8(3) paragraph (e) places a similar obligation on an owner. The instruction, in the case of an employer, is to be provided to every worker in a Type 1, 2 or 3 operation, and in the case of an owner, to every worker employed by the owner who is likely to work with or near ACM mentioned in the record required by section 8.

The Regulation does not require the employer to do the actual instructing but only to ensure that it is provided by a competent person.

The instruction and training related to the use of respirators must cover the following:

- the limitations of the equipment;
- inspection and maintenance of the equipment;
- proper fitting of a respirator; and
- respirator cleaning and disinfection.

Physical Ability to Use a Respirator

The use of a respirator places extra physical demands on the wearer. Air-purifying respirators make breathing more difficult; any respirator is an added weight to carry (more than 25 pounds in the case of a self-contained breathing apparatus (SCBA)); an air-line respirator requires, in addition, a length of hose to be dragged around.

The Regulation requires that a worker not be assigned to an operation requiring the use of a respirator unless physically able to perform the work while using the respirator. Where there is doubt about a worker's ability to work with a respirator, the worker should seek the advice of a physician. The physician's examination should concentrate on conditions that affect the worker's ability to breathe. Heart problems and conditions such as claustrophobia can also make the wearing of a respirator ill-advised. It is recommended that in the case of a worker required to wear SCBA, the weight of the respirator should be considered in judging the ability of a worker to perform the work.

13. Instruction and Training

The control of asbestos exposure is to be achieved by following the procedures prescribed by the Regulation. But these procedures can only be as effective as the person carrying them out. It is therefore essential that everyone involved in doing the work, both workers and supervisors, be properly trained. Instruction and training requirements are outlined in sections 8, 19, and 20 of the Regulation.

An owner is obligated to institute and maintain a training program for those workers who may work with or who may disturb friable or non-friable ACM in the course of their work. An occupier who receives a written notice of the presence of ACM in the area they occupy must develop and maintain a similar training program for his or her workers.

Every worker and supervisor of a worker involved in a Type 3 operation must successfully complete asbestos abatement training as set out in section 20, or have successfully completed equivalent training in another province or territory before performing or supervising the work to which the program relates.

Any person who enters a Type 3 work area but does not perform Type 3 work is not required to complete the MTCU approved Asbestos Abatement Programs but employers are required by the Ministry of Labour to provide such individuals with asbestos hazard awareness training.

For detailed information regarding the mandatory Asbestos Abatement Worker Training Program approved by the Ministry of Training Colleges and Universities please contact your local MTCU office by checking the Blue Pages of your telephone directory or by visiting the MTCU web site to find the location of your closest MTCU office at:

http://www.edu.gov.on.ca/eng/training/apprenticeship/Skills/officlocations.html

14 Medical Surveillance

Asbestos-related diseases develop slowly over time and symptoms are not usually noticed by affected workers until the disease is at an advanced stage. To permit earlier detection of such diseases, the Regulation prescribes medical examinations for workers who work in Type 2 or Type 3 operations. Under this program, employers are required to report the number of hours each employee works on Type 2 or Type 3 operation to the Provincial Physician of the Ministry of Labour. The Provincial Physician keeps track of each worker's accumulated exposure and may recommend that workers undergo the prescribed medical examinations. Workers who are listed in the register may voluntarily undergo the prescribed medical examinations recommended by the Provincial Physician.

What is the purpose of the Asbestos Work Report?

The Asbestos Work Report, Form 1 (Appendix 3), is designed to assist employers in the reporting of each worker's asbestos exposure. Copies of the form are available from Ministry of Labour offices (Appendix 5). The form requires the following information:

- the worker's name, address, date of birth and social insurance number;
- the employer's name and address;
- the name and address of the worker's physician; and
- the number of hours of exposure in each Type 2 or Type 3 operations.

A completed Asbestos Work Report form is to be submitted to the Provincial Physician once in each 12 month period for each worker and when the employment of a worker is terminated. A copy of the form must also be given to the worker.

What is the purpose of the Asbestos Workers Register?

The Provincial Physician uses the data included in the Asbestos Work Report forms that are submitted by employers to establish an Asbestos Workers Register. The register allows the Provincial Physician to identify workers who, because of their potential accumulated exposure to asbestos, should receive a medical examination. When a worker has accumulated 2,000 hours of exposure, the equivalent of one full year's employment, the worker is notified.

Subsection 21(1) requires the employer "of a worker working in a Type 2 or a Type 3 operation" to complete an asbestos work report. Does this section apply only to workers actively involved in the operation, or would supervisors, architects, consultants and other parties not directly involved in the work be considered "workers"?

This analysis would be made on a case-by-case basis and would be contingent on the facts of the specific case.

"Worker" is defined in the Act as "a person who performs work or supplies services for monetary compensation but does not include an inmate of a correctional institution ..."

Supervisors, architects and consultants, may be considered workers depending upon the facts of a specific case.

Should the asbestos work report be used to capture accidental asbestos exposures that may occur during an accidental discovery?

No. The Ministry's position is that an asbestos work report is used to capture hours of exposure for workers involved in a Type 2 or Type 3 operation. Unexpected or accidental exposures should be documented on the Worker's Exposure Incident Form (form 3958A) which is available on the WSIB website.

15. Equivalent Measures and Procedures

The Regulation is able to cover a wide variety of asbestos work because it prescribes a limited number of measures or procedures for doing the work. This means that there may be other ways of carrying out the work that are equally protective of workers. Section 23 of the Regulation therefore permits the substitution of other equivalent measures or procedures, provided that they provide protection for the health and safety of workers that is **at least equal** to the protection that would be provided by complying with the Regulation.

Before using a varied alternate measure or procedure, an employer or constructor must give advance written notice of the change to the joint health and safety committee(s) or to the health and safety representative(s) for the workplace. There is no requirement to notify the Ministry of Labour when using an equivalent measure and/or procedure.

In order to vary a measure or procedure required by the Regulation under section 23, what must be equivalent?

Section 23 allows a constructor or employer to vary a measure or procedure required by the Regulation, provided the measure or procedure, as varied, affords protection for the health and safety of the workers that is at least equal to the protection that would be provided by the Regulation.

Does this mean that based on a risk assessment, the employer may re-classify an operation? For example, carrying out a Type 3 operation as a Type 2 operation?

No. This section does not allow re-classification of the work. The work has already been classified under section 12 of the Regulation based on risk of asbestos exposure involved in the operation.

May the employer use section 23 to vary the respirator required by the Regulation?

The requirement under paragraph 11 of section 15, that "an employer shall provide every worker who will enter the work area with a NIOSH approved respirator in accordance with Table 2 and the worker shall wear and use the respirator" is a "measure" prescribed by the Regulation. Therefore, pursuant to section 23, an employer may vary a respirator required by the Regulation if the varied respirator affords protection for the health and safety of workers that is at least equal to the protection that would be provided by using the respirator prescribed by the Regulation, and the employer gives written notice of the varied respirator, in advance, to the JHSC or health and safety representative for the workplace.

APPENDIX 1 – Glossary

The *Act* - Occupational Health and Safety Act, Revised Statutes of Ontario, 1990, Chapter O.1, as amended.

Actinolite - A mineral that is considered to be asbestos when it occurs in fibrous form.

Air samples – Samples collected by drawing a specified volume of air, in this case at least 2,400 litres of air, through specified sample filters.

Amosite - A type of asbestos that becomes airborne easily and is not easily wetted. The removal of insulation or other materials that contain amosite presents an increased risk of exposure to asbestos relative to the removal of chrysotile-containing material.

Analysis – Methods and procedures used to determine whether material is asbestos-containing material and for establishing its asbestos content and the type of asbestos it contains.

Anthophyllite - A type of mineral that is considered to be a form of asbestos when it occurs in fibrous form.

Asbestiform - A term used to describe certain silicate minerals that crystallize in fibres.

Asbestos - Any of the following asbestiform silicate minerals: actinolite, amosite, anthophyllite, chrysotile, crocidolite, and tremolite.

Asbestos bodies - Inhaled asbestos fibres that have become coated with a substance containing protein and iron; also called "ferruginous bodies".

Asbestos-containing material – Material that contains 0.5 per cent or more asbestos by dry weight; also called "ACM".

Asbestos warts - Harmless skin growths that occur when asbestos fibres penetrate the skin.

Asbestosis - A chronic, restrictive lung disease caused by the inhalation of asbestos fibres.

Building - Defined by the Regulation includes a structure, vault, chamber or tunnel and including (without limitation) its electrical, plumbing, heating and air handling equipment, including rigid duct work of a building or structure.

Bulk Material Samples – Representative samples of homogeneous building materials collected by a competent worker. The minimum number of samples to be collected from an area of homogeneous material is set out in Table 1.

Chrysotile - A type of asbestos mineral which was the type most commonly used in building construction.

Competent worker – A worker who is qualified because of knowledge, training and experience to do the specific work, who is familiar with the Act and with the provisions of the Regulations that apply to the work, and who knows of all potential or actual danger to health or safety in the work.

Construction - Defined by the *Act* as including "erection, alteration, repair, dismantling, demolition, structural maintenance, painting, land clearing, earth moving, grading, excavating, trenching, digging, boring, drilling, blasting, or concreting, the installation of any machinery or plant, and any work or undertaking in connection with a project".

Constructor - Defined by the *Act* as "a person who undertakes a project for an owner and includes an owner who undertakes all or part of a project by himself or by more than one employer".

Crocidolite - A type of asbestos mineral.

Employer - Defined by the *Act* as "a person who employs one or more workers or contracts for the services of one or more workers. The term includes a contractor or subcontractor".

Friable material - Defined by the Regulation as a "material that when dry can be crumbled, pulverized or powdered by hand pressure and includes such material that is crumbled, pulverized or powdered".

HEPA filter - A high efficiency particulate aerosol filter that is at least 99.97 per cent efficient in collecting a 0.3 micrometre aerosol.

Mesothelioma - A rare cancer arising from the surface-lining cells of the pleura and peritoneum.

Negative air - A term used to refer to the system of air filtration used for controlling airborne asbestos at asbestos removal projects through the maintenance of lower air pressure on the inside of an enclosure than exists on the outside.

Non-friable material – Material that cannot be crumbled pulverized or powdered by hand pressure.

Occupier – The term "occupier" has the same meaning as in the *Occupiers' Liability Act* and includes a person who is in physical possession of premises, or a person who has responsibility for and control over the condition of premises or the activities carried on in the premises, or control over persons allowed to enter the premises, despite the fact that there is more than one occupier of the same premise.

Owner - Defined by the *Act* as including a "trustee, receiver, mortgagee in possession, tenant, lessee, or occupier of any lands or premises used or to be used as a workplace, and a person who acts for or on behalf of an owner as an agent or delegate".

Peritoneum - Lining of the abdominal cavity and organs.

Phase Contrast Microscopy (PCM) - The least expensive and most widely used method of analyzing air samples for asbestos. PCM can

be less accurate than Transmission Electron Microscopy (TEM) because all fibres in the sample, regardless of type, are counted

Pleura - Membrane lining the chest cavity and lungs.

Pleural plaques - Areas of fibrous tissue that may calcify or harden; they are not generally associated with disease.

Project – The *Act* defines a project as a construction project, including, but not limited to, the construction of a building, bridge, structure, industrial establishment, mining plant, shaft, tunnel, caisson, trench, excavation, highway, railway, street, runway, parking lot, cofferdam, conduit, sewer, water main, service connection, telegraph, telephone or electrical cable, pipeline, duct or well, or any combination thereof, the moving of a building or structure, and any work or undertaking or any lands or appurtenances used in connection with construction. Appurtenances are things associated with construction.

Surfactant (Surface-active agent) - A substance that reduces the surface tension of water, allowing it to spread over the surface of a material and to penetrate it more easily, e.g., a detergent.

Transmission Electron Microscopy (TEM) – A more expensive and more accurate analytical method for determining the concentration of asbestos. TEM can distinguish asbestos fibres from non-asbestos fibres.

Tremolite - A mineral that is considered to be asbestos when it occurs in fibrous form.

Ventilation System – A system of ductwork, fans, filters and heating and cooling units that supplies, exhausts and conditions air in a work area.

Worker - Defined by the *Act* as a person who performs work or supplies services for monetary compensation but does not include an inmate of a correctional institution or a similar institution or facility who participates in a work project or rehabilitation program.

APPENDIX 2 – Sample List of Suspect Asbestos-Containing Building Materials

There are an estimated 3000 products that contain asbestos. In Ontario asbestos was widely used in sprayed-on material and in pipe and boiler insulation until 1973[3]. The use of many other asbestos containing materials continued until the mid 1980's. Asbestos is still used in the manufacture of a limited number of products, including some floor tiles, cement products, friction materials and textiles. The following list was adapted from the United States Environmental Protection Agency's (EPA) *Sample List of Suspect Asbestos Containing Materials*[4]. It is not an all inclusive list but is intended as a general guide to show which types of building materials may contain asbestos.

Possible Asbestos-Containing Materials in Buildings

Acoustical Plaster	Elevator Equipment Panels
Adhesives	Fire Doors
Asphalt Floor Tile	Fireproofing Materials
Base Flashing	Flooring Backing
Blown-in (Loose fill) Insulation	Heating and Electrical Ducts
Boiler Insulation	High Temperature Gaskets
Breaching Insulation	HVAC Duct Insulation
Caulking/Putties	Joint Compounds
Ceiling Tiles and Lay-in Panels	Pipe Insulation (corrugated air-cell, block, etc.)
Cement Pipes	Roofing Felt
Cement Siding	Roofing Shingles
Cement Wallboard	Spackling Compounds

[3] J.S. Dupre, J.F. Mustard & R.J. Uffin, *Report of the Royal Commission on Matters of Health and Safety Arising form the Use of Asbestos in Ontario*, Ontario Ministry of the Attorney General, Toronto, Ontario, 1984, page 12.

[4] US Environmental Protection Agency, http://www.epa.gov/Region06/6pd/asbestos/asbmatl.htm

Possible Asbestos-Containing Materials in Buildings

Construction Mastics (floor tile, carpet, ceiling tile, etc.)	Sprayed-on Insulation
Cooling Towers	Taping Compounds (thermal)
Decorative Plaster	Textured Paints/Coatings
Ductwork Flexible Fabric Connections	Thermal Paper Products
Electrical Cloth	Vinyl Floor Tile
Electrical Panel Partitions	Vinyl Sheet Flooring
Electrical Wiring Insulation	Vinyl Wall Coverings
Elevator Brake Shoes	Wallboard

Appendix 3 – Ministry Of Labour Asbestos Work Report Form 1

Ontario Ministry of Labour / Ministère du Travail

Form 1 / Formulaire n° 1
Occupational Health and Safety Act /
Loi sur la santé et la sécurité au travail

For the Period / Pour la période
From / du To / au

This form is required under Section 21 of the Regulation for Asbestos on Construction Projects and in Buildings & Repair Operations.
Ce formulaire est requis en vertu de l'article 21 du règlement sur le travail avec l'amiante dans les projets de construction et de réparations d'édifices.

Asbestos Work Report / Rapport sur le travail avec l'amiante

Name of Employer / Nom de l'employeur

Employer's Address / Adresse de l'employeur

Employee's Surname / Nom de l'employé

Given Name / Prénom

Init. / Init.

Employee's Address / Adresse de l'employé
(Street No. Street City, Postal Code / N° de rue, rue ville, code postal)

S.I.N. / N° d'assurance sociale

Date of Birth / Date de naissance
D/J M/M Y/A

Family Physician's Name and Address / Nom et adresse du médecin de famille

Type 2

Type 3

Hours of Work /
Heures de travail

Return to: Provincial Physician
Occupational Health & Safety Branch
Ministry of Labour
505 University Ave
19th Floor
Toronto ON M7A 1T7

Renvoyer au: Médecin provincial
Direction de la santé et de la sécurité au travail
Ministère du Travail
505, avenue University
19e étage
Toronto (ON) M7A 1T7

Signature of Employer / Signature de l'employeur

Date

When complete, provide one copy to:
Provincial Physician
Worker
Employer

Une fois rempli, veuillez envoyer un exemplaire de ce formulaire aux personnes suivantes:
Médecin provincial
Travailleur
Employeur

2463 (rev. 07/07)

Appendix 4 – Checklists for Type 1, Type 2 and Type 3 Operations

The Regulation classifies work involving asbestos on construction projects, buildings and repair operations as either a Type 1, Type 2 or Type 3 operation. The checklists that follow address many of the requirements for Type 1, Type 2 and Type 3 operations and have been prepared to make it easier to determine if the requirements appropriate to the type of operation are being followed.

Each item in each checklist is followed by a reference to the corresponding section of the Regulation.

Disclaimer:

The following checklists are intended to facilitate compliance with the requirements of the Regulation regarding Type 1, 2 and 3 operations. These checklists do not specify every regulatory requirement related to Type 1, 2 and 3 operations and should not be exclusively relied upon to ensure compliance with regulatory requirements. For the comprehensive requirements, please refer to the Regulation.

Note: Throughout this checklist, the use of the term "Hepa vacuuming" refers to vacuuming with a vacuum equipped with a Hepa filter.

TYPE 1 OPERATIONS	
1. Visible dust removed from any surface in work area and the thing to be worked on by damp wiping or vacuuming with a HEPA filter-equipped vacuum before beginning work if dust on that surface is likely to be disturbed.	section 14, paragraph 1
2. Specified drop sheets or other measures appropriate to work being done used to stop the spread of dust from the work area	section 14, paragraph 2
3. Wetting agent added to water used to control the spread of dust	section 14, paragraph 4
4. Wetting of less than one square metre of drywall in which drywall compounds containing ACM have been used unless wetting would create a hazard or cause damage	section 14, paragraph 3
5. No eating, drinking, chewing or smoking in work area	section 14, paragraph 11
6. Compressed air not used to clean up or remove dust from any surface	section 14, paragraph 10
7. Dust and waste cleaned up frequently and at regular intervals using vacuum with Hepa filter or by damp mopping or wet sweeping	section 14, paragraph 5
8. Drop sheets placed in dust-tight containers that are suitable for the type of waste, impervious to asbestos and identified as asbestos waste.	section 14, paragraph 5 & section 15, paragraph 5
9. Rigid barriers and portable enclosures that can be cleaned thoroughly may be reused if they are cleaned using a vacuum equipped with a HEPA filter or by damp wiping	section 14, paragraphs 8 & 9
10. Drop sheets, polyethylene sheeting and similar materials used for barriers and enclosures shall not be reused and shall be wetted and placed in prescribed asbestos waste containers	section 14, paragraph 5, 6 and 7

TYPE 1 OPERATIONS	
11. Facilities for washing the hands and face shall be provided to workers	section 14, paragraph 15
12. Every worker shall use the facilities for washing the hands and face when leaving the work area	section 14, paragraph 15
13. Instruction and training shall be provided by a competent person to every worker working in a Type 1 operation	section 19

Additional Requirements for Type 1 Operations Where a Worker Requests a Respirator or Protective Clothing	
1. If a worker requests a respirator the employer must provide a NIOSH approved air purifying half-mask respirator with N-100, R-100 or P-100 particulate filter as set out in Table 2, and the worker must wear and use the respirator.	section 14, paragraph 12
2. The respirator must be fitted so that there is an effective seal between the respirator and the worker's face unless the respirator is equipped with a hood or helmet.	subsection 13 (1)(a)
3. The respirator must be assigned to the worker for his or her exclusive use, if practicable.	subsection 13 (1)(b)
4. The respirator must be used and maintained as per the employer's written procedures that comply with the manufacturer's specifications.	subsection 13 (1)(c)
5. A respirator that has been issued for the exclusive use of one worker must be cleaned, disinfected and inspected after use on each shift, or more often if necessary.	subsection 13(1)(d)
6. A respirator that is used by more than one worker must be cleaned, disinfected and inspected after each use.	subsection 13 (1)(d)
7. A respirator must have damaged or deteriorated parts replaced before being used by a worker.	subsection 13(1)(e)
8. A respirator must be stored in a convenient, clean and sanitary location when not in use	subsection 13(1)(f)

Additional Requirements for Type 1 Operations Where a Worker Requests a Respirator or Protective Clothing	
9. If respirators are used in the workplace the employer must establish written procedures regarding the selection, care and use of respirators.	subsection 13(3)(a)
10. A copy of the procedures shall be given to and reviewed with each worker who is required to wear a respirator.	subsection 13(3)(b)
11. A worker shall not be assigned to an operation that requires the use of a respirator unless he or she is physically able to perform the operation while wearing the respirator.	section 13 (4)
12. If a worker requests protective clothing the employer must provide clothing as required by section 15, paragraph 12 and the worker must wear it.	section 14, paragraph 13
13. A worker who is provided with protective clothing shall, before leaving the work area, decontaminate the protective clothing using a vacuum equipped with a HEPA filter, or by damp wiping, before removing the protective clothing	subsection 14 subparagraph 14 i
14. Protective clothing that will not be reused must be placed in a waste container as described in section 15 paragraph 5	subsection 14 subparagraph 14 ii

TYPE 2 OPERATIONS	
Preparation of the Work Area	
1. Signs warning of an asbestos dust hazard must be posted and must be in sufficient numbers to warn of the hazard	section 15 paragraph 1 & section 15 paragraph 2
2. Clearly visible signs must also say that access to the work area is restricted to persons wearing protective clothing and equipment and that there is an asbestos hazard	section 15 subparagraph 2ii
3. Subject to paragraph 5 of section 16, drop sheets made of polyethylene or other material that is impervious to asbestos or other measures appropriate to the work must be used to control the spread of dust from a work area	section 16 paragraph 4
Note: The following 5 items apply only to the preparation of the work area for Type 2 operations mentioned in subsection 12(3) paragraphs 1 or 2 of the Regulation, i.e., the removal of a false ceiling or the removal or disturbance of one square metre or less of friable ACM.	
4. When removing all or part of a false ceiling where ACM may be lying on the top surface of the ceiling tiles (paragraph 1 of subsection 12(3)), friable ACM that is likely to be disturbed must be removed by damp wiping or vacuuming with HEPA filter-equipped vacuum once the space above the false ceiling has been accessed	section 16 paragraph 1
5. Before beginning work that is likely to disturb friable ACM that is crumbled, pulverized or powdered and that is lying on any surface, the friable material must be cleaned up by damp wiping or HEPA vacuuming	section 16 paragraph 2
6. If the operation is mentioned in subsection 12(3) paragraph 1 or 2 and is carried on indoors the spread of dust from the work area must be prevented, if practicable, using an enclosure made of material that is impervious to asbestos	section 16 sub-subparagraph 5 i

Preparation of the Work Area	
7. If the operation is mentioned in subsection 12(3) paragraph 1 or 2 and is carried on indoors the spread of dust from the work area must be prevented, if practicable, by disabling the mechanical ventilation system serving the area	section 16 subparagraph 5ii
8. If the operation is mentioned in subsection 12(3) paragraph 1 or 2 and is carried on indoors the spread of dust from the work area must be prevented, if practicable, by sealing the ventilation ducts to and from the work area	section 16 subparagraph 5iii

Additional requirements for Type 2 Operations	
1. A wetting agent must be added to water used to control the spread of dust and fibres	section 15 paragraph 3
2. Eating, drinking, chewing or smoking must not be permitted in the work area	section 15 paragraph 4
3. Friable ACM that is not crumbled, pulverized or powdered and that may be disturbed or removed must be thoroughly wetted and kept wet unless wetting would create hazard or cause damage	section 16 paragraph 3
4. Before commencing work on friable ACM that is crumbled, pulverized or powdered and is lying on any surface, the friable material shall be cleaned up and removed by damp wiping or HEPA vacuuming	section 16 paragraph 2
5. Compressed air must not be used to clean up and remove dust from any surface	section 15 paragraph 13
6. Containers for dust and waste must be dust tight, suitable for the type of waste, impervious to asbestos and identified as asbestos waste	section 15 paragraph 5

Additional requirements for Type 2 Operations	
7. Frequently and at regular intervals during the work and immediately upon completion of the work dust and waste must be cleaned up and removed by damp mopping, wet sweeping or HEPA vacuuming and placed in a prescribed asbestos waste container	section 15 subparagraph 6i
8. Prescribed containers for asbestos waste must be cleaned with a damp cloth or by HEPA vacuuming immediately before being removed from the work area	section 15 subparagraph 5v
9. Prescribed containers for asbestos waste must be removed from the workplace frequently and at regular intervals	section 15 subparagraph 5vi
10. When asbestos dust and waste have been cleaned up and removed upon completion of the work drop sheets must be wetted and placed in a prescribed asbestos waste container as soon as practicable	section 15 subparagraph 6ii
11. Drop sheets must not be reused	section 15 paragraph 7
12. After the completion of the work polyethylene sheeting and similar materials used for barriers and enclosures shall not be reused and shall be wetted and placed in an asbestos waste container as soon as practicable after paragraph 6 of section 15 has been complied with.	section 15 paragraph 8
13. Barriers and enclosures must not be reused unless they are rigid and can be cleaned thoroughly	section 15 paragraph 10
14. After the work is completed, barriers and enclosures that will be reused must be cleaned by damp wiping or HEPA vacuuming as soon as practicable after paragraphs 6 and 8 of section 15 have been complied with	section 15 paragraph 9

Glove Bag Operations – Notifications	
1. Before beginning a glove bag removal of one square metre or more of insulation the constructor (jn the case of a project) or employer (in any other case) must notify an inspector at the office of the Ministry of Labour nearest the workplace orally and in writing	subsection 11(2)

Glove Bag Operations – Preparation of the Work Area Please note that S.15 and 16 apply to glove bag operations as well	
1. The work area must be separated from the rest of the workplace by walls, barricades, fencing or other suitable means	section 17 paragraph 1
2. The spread of ACM from the work area must be prevented by disabling the mechanical ventilation system serving the work area	section 17 paragraph 2
3. The spread of ACM from the work area must be prevented by sealing all openings or voids, including ventilation ducts to and from the work area	section 17 paragraph 2
4. Surfaces below the work area must be covered with drop sheets made of polyethylene or other material that is impervious to asbestos	section 17 paragraph 3

Glove Bag Operations – Glove Bag Requirements	
1. Glove bags must be made of material that is impervious to asbestos and strong enough to support the weight of material that the bag will hold	section 17 paragraph 4
2. Glove bags must have sleeves and gloves permanently sealed to the body of the bag to allow the worker to access and deal with the insulation	section 17 subparagraph 5i
3. Glove bags must maintain a sealed enclosure throughout the work and allow the worker access to deal with the insulation	section 17 subparagraph 5i

Glove Bag Operations – Glove Bag Requirements	
4. Glove bags must be equipped with valves or openings to allow insertion of a vacuum hose and the nozzle of a water sprayer while maintaining the seal to the pipe or other structure that is being worked on	section 17 subparagraph 5ii
5. Glove bags must be equipped with a tool pouch with a drain	section 17 subparagraph 5 iii
6. Glove bags must have a seamless bottom and a means of sealing off the lower portion of the bag	section 17 subparagraph 5iv
7. Glove bags must have a high strength double throw zipper and removable straps if the bag is to be moved during the operation	section 17 subparagraph 5v

Glove Bag Operations - Restrictions on Use	
1. Glove bags must not be used to remove insulation from a pipe, duct or similar structure if it may not be possible to maintain a proper seal for any reason	section 17 subparagraph 6i
2. Glove bags must not be used if the glove bag could be damaged for any reason	subsection 17 subparagraph 6ii

Glove Bag Operations – Work Practices	
1. The insulation jacketing or coating must be inspected for damage or defects just before the glove bag is attached	section 17 paragraph 7
2. Damage or defects in insulation jacketing or coatings must be repaired before the glove bag is attached	section 17 paragraph 7
3. Glove bags must be inspected for damage or defects immediately before it is attached to the pipe, duct or other structure	section 17 subparagraph 8i
4. Glove bags must be inspected for damage or defects at regular intervals while it is in use	section 17 subparagraph 8ii

Glove Bag Operations – Work Practices	
5. Upon inspection glove bags that are found to be damaged before being attached to the pipe or other structure must not be used and must be disposed of	section 17 paragraph 9
6. If a glove bag is found to be damaged during use, the use of the glove bag must be stopped	section 17 subparagraph 10i
7. If a glove bag is found to be damaged during use the inner surface of the glove bag and its contents must be wetted	section 17 paragraph 10ii
8. Once the inner surface and the contents of the damaged or defective glove bag have been wetted the bag and its contents must be removed and placed in a prescribed asbestos waste container	section 15 paragraph 5, section 17 subparagraph 10 iii
9. Once the damaged or defective glove bag has been removed and discarded the work area must be cleaned by HEPA vacuuming before the removal work continues	section 17 subparagraph 10iv
10. When the removal has been completed the inner surface of the glove bag and the waste inside must be thoroughly wetted	section 17 subparagraph 11i
11. When the inner surface of the glove bag and the waste have been thoroughly wetted the air inside the bag must be removed through an elasticized valve using a HEPA vacuum	section 17 subparagraph 11i
12. When the air has been removed from the glove bag the pipe, duct or other structure must be wiped down and sealed with a suitable encapsulant	section 17 subparagraph 11ii
13. Once the duct or other structure has been wiped down and sealed the glove bag with the waste inside must be placed in a prescribed asbestos waste container	section (17) subparagraph 11 iii
14. Once the glove bag has been removed and discarded the work area must be cleaned by damp wiping or HEPA vacuuming	section 17 subparagraph 11iv

Protective Clothing and Equipment	
1. Only persons wearing protective clothing and equipment may enter a work area where there is an asbestos dust hazard	section 15 paragraph 14
2. Protective clothing must be provided by the employer and worn by every worker who enters the work area	section 15 paragraph 12
3. The protective clothing shall be made of a material that does not readily retain or permit penetration of asbestos fibres	section 15 subparagraph 12i
4. The protective clothing must consist of head covering and full body covering that fits snugly at the ankles, wrists and neck to prevent asbestos fibres from reaching the garments and skin under the protective clothing	section 15 subparagraph 12ii
5. The protective clothing must include suitable footwear	section 15 subparagraph 12 iii
6. The protective clothing must be repaired or replaced if torn	section 15 sub paragraph 12iv
7. Protective clothing must be decontaminated by damp wiping or HEPA vacuuming before leaving the work area	section 16 subparagraph 6i
8. Protective clothing that will not be reused must be decontaminated, placed in a prescribed container	section 16 subparagraph 6ii
9. The employer must provide every worker who will enter the work area with a NIOSH approved respirator in accordance with Table 2 of the Regulation	section 15 paragraph 11
10. The worker must wear and use the respirator provided by the employer	section 15 paragraph 11
11. The employer must establish written procedures for the selection, care and use of respirators	subsection 13(3) clause (a)

Protective Clothing and Equipment	
12. A copy of the procedures must be given to and reviewed with each worker who is required to wear a respirator	subsection 13(3) clause (b)
13. A worker must not be assigned to do work requiring the use of a respirator unless the worker is physically able to do the work while wearing the respirator	subsection 13(4)
14. Respirators must be fitted so that there is an effective seal between the respirator and the worker's face, unless the respirator is a hood or helmet type	subsection 13(1) clause (a)
15. Respirators must be assigned to a worker for his or her exclusive use, if practicable	subsection 13(1) clause (b)
16. Respirators must be used and maintained in accordance with written procedures that are consistent with the manufacturer's specifications	subsection 13(1) clause (c)
17. Respirators that are assigned to one worker must be cleaned, disinfected and inspected at least after use on each shift	subsection 13(1) clause (d)).
18. Respirators that are used by more than one worker must be cleaned, disinfected and inspected after each use	subsection 13(1) clause (d)
19. Damaged or deteriorated respirator parts must be replaced before the respirator is used by a worker	subsection 13(1) clause (e)
20. Respirators must be stored in a convenient, clean and sanitary location when not in use	subsection 13(1) clause (f)
21. Workers must receive training in the use, cleaning and disposal of respirators and protective clothing	subsection 19(1) paragraph 3
22. The respirator training must include the limitations of the equipment, inspection and maintenance, proper fitting and cleaning and disinfection	subsection 19(3)

OTHER MEASURES AND PROCEDURES APPLICABLE TO ALL TYPES OF OPERATIONS	
1. The employer must ensure that every worker who works on a Type 1, Type 2 or Type 3 operation receives training and instruction on the hazards of asbestos exposure, personal hygiene and work practices and the use, cleaning and disposal of respirators and protective clothing	subsection 19(1)
2. The JHSC or health and safety representative must be advised of the time and place of the training	subsection 19(2)
3. The employer must complete an asbestos work report (Form 1) for each worker working in a Type 2 or 3 operation at least once in each 12 month period and upon termination of the worker's employment	subsection 21(1)
4. The employer must give a copy of the asbestos work report to the worker and to the Provincial Physician, Ministry of Labour	subsection 21(2)
5. A constructor for a project or employer may vary a measure or procedure if the varied measure or procedure affords protection for the health and safety of workers that is at least equal to the protection that would be provided by complying with the measure or procedure specified in the Regulation; **AND**	section 23 paragraph 1
if the constructor or employer gives advance written notice of the varied measure or procedure to the joint health and safety committee or the health and safety representative for the workplace	section 23 paragraph 2
6. Any written notice required by the Regulation may be given to the Ministry inspector by delivering it to the office in person	subsection 24(1) clause a
7. Written notice may be given to the Ministry inspector by sending it by ordinary mail, by courier or by fax	subsection 24(1) clause b
8. Written notice may be given to the Ministry inspector by electronic means that are acceptable to the Ministry	subsection 24(1) clause c

OTHER MEASURES AND PROCEDURES APPLICABLE TO ALL TYPES OF OPERATIONS	
9. Required oral notice to the Ministry inspector may be given in person	subsection 24(2) clause a
10. Required oral notice to the Ministry inspector may be given by telephoning the inspector	subsection 24(2) clause b
11. Oral notice to the Ministry inspector may be given by electronic means that are acceptable to the Ministry	subsection 24(2) clause c

TYPE 3 OPERATIONS	
Notifications	
1. Before starting a Type 3 operation the constructor (on a project) or the employer (in any other case) must notify a Ministry of Labour inspector orally and in writing at the Ministry office nearest to the workplace of the operation	subsection 11(1)

Preparation of the Work Area	
1. Clearly visible signs warning of an asbestos dust hazard must be posted and must be in sufficient numbers to warn of the hazard	section 15 paragraphs 1&2
2. Signs must also say that access to the work area is restricted to persons wearing protective clothing and equipment and that there is an asbestos dust hazard	section 15 subparagraphs 2i and 2ii
3. The work area must be separated from rest of workplace by walls, barricades, fencing or other suitable means	Subsection 18 (1)

Preparation of the Work Area	
Note: The following 3 items apply to Type 3 operations mentioned in subsection 12(4) paragraph 5, work with non-friable ACM using power tools that are not attached to dust collecting devices equipped with HEPA filters.	
4. The spread of asbestos dust from work area controlled by walls or an enclosure of polyethylene or other suitable material that is impervious to asbestos if work area not enclosed by walls	subsection 18(2) subparagraph 1i
5. If the enclosure material is opaque the enclosure must be equipped with one or more transparent windows to allow observation of the entire enclosure	subsection 18(2) subparagraph 1i
6. Each entrance or exit from the work area must be fitted with curtains of polyethylene sheeting or other suitable material that is impervious to asbestos	subsection 18(2) subparagraph 1ii
Note: The following 7 items apply to Type 3 operations mentioned in subsection 12(4) paragraphs 1, 2, 3 or 4, when the work is done outdoors.	
7. Temporary electrical power distribution systems for tools and equipment involved in wet removals must have ground fault circuit interrupters	subsection 18(3) paragraph 4
8. A decontamination facility must be located as close as practicable to the work area	subsection 18(3) paragraph 5
9. The decontamination facility must include a room for changing into protective clothing and for storing contaminated protective clothing and equipment	subsection 18(3) subparagraph 5 i
10. The decontamination facility must include a shower room as prescribed in subsection 18(4) paragraph 7	subsection 18(3) paragraph 5ii and subsection 18(4) paragraph 7
11. The decontamination facility must include a room suitable for changing into street clothes and for storing clean clothing and equipment	subsection 18(3) subparagraph 5iii

Preparation of the Work Area	
12. The three rooms that make up the decontamination facility must be arranged in sequence and constructed so that any person entering or leaving the work area must pass through each room	subsection 18(3) paragraph 6
13. When leaving the work area, the worker must follow specified procedures for decontaminating clothing and equipment	subsection 18(3) Paragraph 7
Note: The following 10 items apply to indoor Type 3 operations mentioned in subsection 12(4) paragraphs 1, 2, 3, 4, and 6	
14. The spread of dust from the work area must be prevented by walls or by an enclosure of polyethylene or other suitable material that is impervious to asbestos if the work area is not enclosed by walls	subsection 18(4) paragraph 2
15. The spread of dust from the work area must also be prevented by a decontamination facility consisting of a series of interconnecting rooms	subsection 18(4) paragraph 2
16. The decontamination facility must include a room suitable for changing into protective clothing and for storing contaminated protective clothing	subsection 18(4) subparagraph 2i
17. The decontamination facility must include a prescribed shower room	subsection 18(4) paragraph 2ii paragraph 7
18. The decontamination facility must include a room suitable for changing into street clothes and for storing clean clothing and equipment	subsection 18(4) paragraph 2iii
19. The decontamination facility must have curtains made of polyethylene or other suitable material that is impervious to asbestos fitted to each side of the entrance or exit to each room	subsection 18(4) subparagraph 2 iv
20. The rooms that make up the decontamination facility must be arranged in sequence	subsection 18(4) paragraph 3

Preparation of the Work Area	
21. The rooms that make up the decontamination facility must be constructed so that any person entering or leaving the work area must pass through each room	subsection 18(4) paragraph 3
22. The mechanical ventilation system serving the work area must be disabled	subsection 18(4) paragraph 4
23. All openings or voids, including ventilation ducts to or from the work area, must be sealed by tape or other appropriate means	subsection 18(4) paragraph 4
24. Temporary electrical power distribution systems for tools and equipment involved in wet removals must be equipped with ground fault circuit interrupters	subsection 18(4) paragraph 10

Work Practices	
1. A wetting agent must be added to water used to control the spread of dust and fibres	section 15 paragraph 3
2. Eating, drinking, chewing or smoking must not be permitted in the work area	section 15 paragraph 4
3. Compressed air must not be used to clean up and remove dust from any surface	section 15 paragraph 13
4. Containers for dust and waste must be dust tight, suitable for the type of waste, impervious to asbestos and identified as asbestos waste	section 15 paragraph 5
5. Frequently and at regular intervals during the work and immediately upon completion of the work dust and waste must be cleaned up and removed by damp mopping, wet sweeping or HEPA vacuuming and placed in a prescribed asbestos waste container	section 15 subparagraph 6i
6. Containers for asbestos waste must be cleaned with a damp cloth or by HEPA vacuuming immediately before being removed from the work area	section 15 paragraph 5
7. Containers for asbestos waste must be removed from the workplace frequently and at regular intervals	section 15 subparagraph 5vi

Work Practices	
8. When asbestos dust and waste has been cleaned up at regular intervals and removed upon completion of the work, drop sheets must be wetted and placed in a prescribed asbestos waste container as soon as practicable after paragraph 6 of subsection 18(4) has been complied with	section 15 subparagraph 6ii
9. Drop sheets must not be reused	section 15 paragraph 7
10. After the completion of the work polyethylene sheeting and similar materials used for barriers and enclosures shall not be reused and shall be wetted and placed in a prescribed asbestos waste container as soon as practicable after paragraph 6 of 18(4) has been complied with	section 15 paragraph 8
11. Barriers and enclosures must not be reused unless they are rigid and can be cleaned thoroughly	section 15 paragraph 10
12. After the work is completed, barriers and enclosures that will be reused must be cleaned by damp wiping or HEPA vacuuming as soon as practicable after dust and waste has been cleaned up and drop sheets have been wetted and placed in a prescribed asbestos waste container after paragraphs 6 and 8 have been complied with	section 15 paragraph 9
13. Only persons wearing protective clothing can enter work area where there is an asbestos dust hazard	section 15 paragraph 14
14. Employers and workers must follow the prescribed procedures for protective clothing and equipment	section 15 paragraph 12

Work Practices	
Note: The following items apply to Type 3 operations referred to in subsection 18(1) paragraph 2, work on non-friable ACM done with power tools not attached to dust collection devices equipped with HEPA filters.	
15. Unless the work is carried on outdoors or inside a building that will be demolished and that will not be entered by anyone other than workers involved in the operation or demolition, the spread of dust from the work area must be prevented by creating and maintaining inside the enclosed area a negative air pressure of 0.02 inches of water relative to the area outside the enclosed area, by installing a ventilation system equipped with a HEPA filtered exhaust unit	subsection 18(2) subparagraph 2i
16. Unless the work is carried on outdoors or inside a building that will be demolished and that will not be entered by anyone other than workers involved in the operation, the spread of dust from the work area must be prevented by ensuring that replacement air taken from outside the enclosed area is free from contamination by any hazardous material	subsection 18(2) subparagraph 2ii
17. Unless the work is carried on outdoors or inside a building that will be demolished and that will not be entered by anyone other than workers involved in the operation, the spread of dust from the work area must be prevented by using a device to measure the difference in air pressure between the enclosed area and the area outside it	subsection 18(2) subparagraph 2iii
18. The ventilation system used to maintain negative pressure inside the enclosed area must be inspected and maintained by a "competent worker" before each use to ensure that there is no air leakage	subsection 18(2) paragraph 3
19. If the ventilation system filter is found to be damaged or defective it must be replaced before the ventilation system is used	subsection 18(2) paragraph 3
20. Before leaving the work area the worker must decontaminate his or her protective clothing by damp wiping or HEPA vacuuming before removing the protective clothing	subsection 18(2) subparagraph 4i

Work Practices	
21. Protective clothing that will not be reused must be placed in a prescribed asbestos waste container as described in section 15 paragraph 5	subsection 18(2) subparagraph ii
22. Facilities for washing the hands and face must be made available to workers	subsection 18(2) paragraph 5
23. Every worker must wash his or her hands and face when leaving the work area	subsection 18(2) paragraph 5
Note: The following items apply to outdoor operations mentioned in subsection 12(4) paragraphs 1, 2, 3 or 4,	
24. If practicable, any ACM to be removed must be thoroughly wetted before and during removal unless wetting would create a hazard or cause damage	subsection 18(3) paragraph 1
25. Dust and waste must not be permitted to fall freely from one work level to another	subsection 18(3) paragraph 2
26. If practicable, the work area shall be washed down with water after completion of the clean-up and removal described in section 15 paragraph 6	subsection 18(3) paragraph 3
27. When leaving the work area the worker must enter the decontamination facility and must decontaminate his or her protective clothing by damp wiping or HEPA vacuuming before removing the protective clothing	subsection 18(3) subparagraph 7i
28. Protective clothing that will not be reused must be placed in a prescribed asbestos waste container as described in section 15 paragraph 5	subsection 18(3) paragraph 7ii
29. After removing and disposing of the protective clothing the worker must shower	subsection 18(3) subparagraph 7iii

Work Practices	
30. After showering the worker must remove and clean the respirator	subsection 18(3) subparagraph 7iv
31. Equip temporary electrical power distribution systems with ground fault circuit interrupters	subsection 18(3) paragraph 4
Note: The following items refer to indoor Type 3 operations mentioned in subsection 12(4) paragraphs 1, 2, 3, 4, and 6	
32. Friable ACM that is crumbled, pulverized or powdered and is lying on any surface in the work area must be cleaned up and removed by damp wiping or HEPA vacuuming	subsection 18(4) paragraph 1
33. Everything must be removed from the work area or covered with polyethylene sheeting or other suitable material that is impervious to asbestos	subsection 18(4) paragraph 1
34. Friable ACM must be thoroughly wetted before and during removal unless wetting would create a hazard or cause damage	subsection 18(4) paragraph 11
35. Unless the work is carried on inside a building that will be demolished and that will not be entered by anyone other than workers involved in the operation, the spread of dust from the work area must be prevented by creating and maintaining inside the enclosed area a negative air pressure of 0.02 inches of water relative to the area outside the enclosed area, by installing a ventilation system equipped with a HEPA filtered exhaust unit	subsection 18(4) subparagraph 5i
36. Unless the work is carried on inside a building that will be demolished and that will not be entered by anyone other than workers involved in the operation, the spread of dust from the work area must be prevented by ensuring that replacement air taken from outside the enclosed area is free from contamination by any hazardous material	subsection 18(4) subparagraph 5ii

Work Practices	
37. Unless the work is carried on inside a building that will be demolished and that will not be entered by anyone other than workers involved in the operation, the spread of dust from the work area must be prevented by using a device to measure the difference in air pressure between the enclosed area and the area outside it at regular intervals	subsection 18(4) paragraph 5iii
38. The ventilation system used to maintain negative pressure inside the enclosed area must be inspected and maintained by a competent worker before each use to ensure that there is no air leakage	subsection 18(4) paragraph 6
39. If the ventilation system filter is found to be damaged or defective it must be replaced before the ventilation system is used	subsection 18(4) paragraph 6
40. When leaving the work area the worker must enter the decontamination facility and must decontaminate his or her protective clothing by damp wiping or HEPA vacuuming before removing the protective clothing	subsection 18(4) subparagraph 8i
41. Protective clothing that will not be reused must be placed in a prescribed asbestos waste container as described in section 15 paragraph 5	subsection 18(4) subparagraph 8ii
42. After removing and disposing of the protective clothing the worker must shower in a prescribed shower room	subsection 18(4) subparagraph 8iii
43. After showering the worker must remove and clean the respirator	subsection 18(4) subparagraph 8iv
44. The work area must be inspected by a competent worker for defects in the enclosure, barriers and decontamination facility at the beginning of each shift	subsection 18(4) subparagraph 12i

Work Practices	
45. The work area must be inspected by a competent worker for defects in the enclosure, barriers and decontamination facility at the end of a shift if there is no shift that begins immediately after the first shift	subsection 18(4) subparagraph 12ii
46. The work area must be inspected by a competent worker for defects in the enclosure, barriers and decontamination facility at least once on days when there are no shifts	subsection 18(4) subparagraph 12iii
47. Defects observed during an inspection required by subsection 18(12) must be repaired immediately and no other work may be done until the repairs have been completed	subsection 18(4) paragraph 13
48. Dust and waste must be kept wet if practicable	subsection 18(4) paragraph 14
49. On completion of the work negative air pressure must be maintained if it was required by subsection 18(4) subparagraph 5(i))	subsection 18(4) subparagraph 15 i
50. On completion of the work the inner surface of the enclosure and the work area must be cleaned by a thorough washing or by HEPA vacuuming	subsection 18(4) subparagraph 15 ii
51. On completion of the work equipment, tools and other items used in the work must be cleaned with a damp cloth or by HEPA vacuuming or must be placed in an asbestos waste container (section 15 paragraph 5) before being removed from the enclosure	subsection 18(4) subparagraph 15 iii
52. On completion of the work a visual inspection must be done by a competent worker to ensure that the enclosure and the work area inside the enclosure are free from visible dust, debris or residue that may contain asbestos	subsection 18(4) subparagraph 15 iv

Work Practices	
53. When the work area inside the enclosure is dry after the steps set out in subparagraphs 15 ii, iii and iv have been completed, clearance air testing must be done by a competent worker, unless the work is done inside a building that is to be demolished and will not be entered by any person except the workers involved in the operation and workers involved in the demolition	subsection 18(4) paragraph 16
54. Barriers, enclosure and decontamination facility must not be removed or dismantled until cleaning has been done as described in paragraph 15	subsection 18(4) subparagraph 17 i
55. Barriers, enclosure and decontamination facility must not be removed or dismantled until clearance testing has been completed, if required, and the work area inside the enclosure has passed the clearance air test	subsection 18(4) subparagraph 17 ii

Clearance Air Testing	
1. Sample collection and analysis must be done using phase contrast microscopy method, or using transmission electron microscopy	subsection 18(5) subparagraphs 1i and ii
2. If the work area inside the enclosure fails the clearance air test the steps prescribed in sub-paragraphs 15 ii, iii, iv of subsection 4 shall be repeated and the work area allowed to dry before a further test is carried out unless the first test using phase contrast microscopy has failed and the samples are subjected to a second analysis using transmission electron microscopy	subsection 18(6) paragraph 6
3. Clearance air testing using phase contrast microscopy must be done using NIOSH Method 7400 using the fibre counting rules	subsection 18(6)
4. Testing must be based on samples taken inside the enclosure	subsection 18(6) paragraph 1

Clearance Air Testing	
5. Forced air must be used before and during the sampling process to ensure that fibres are dislodged from all surfaces and remain airborne during sampling	subsection 18(6) paragraph 2
6. At least 2,400 litres of air must be drawn through each sample filter	subsection 18(6) paragraph 3
7. The number of samples taken must be as set out in Table 3 of the Regulation	subsection 18(6) paragraph 4
8. The work area inside the enclosure passes the clearance test only if every air sample has a collection of fibres that does not exceed 0.01 fibres per cubic centimetre of air	subsection 18(6) paragraph 5
9. When a second analysis is done as described in subsection 18(6) paragraph 6 the work area inside the enclosure passes the clearance air test only if every sample collected has a concentration of asbestos fibres that does not exceed 0.01 fibres per cubic centimetre of air	subsection 18(6) paragraph 7
10. Clearance air testing using transmission electron microscopy must be done in accordance with NIOSH Method 7402	subsection 18(7)
11. Testing must be based on samples taken inside the enclosure and samples taken outside the enclosure but inside the building	subsection 18(7) paragraph 1
12. Forced air must be used inside the enclosure before and during the sampling process to ensure that fibres are dislodged from all surfaces before sampling begins and are kept airborne during the sampling process	subsection 18(7) paragraph 2
13. At least 2,400 litres of air must be drawn through each sample filter	subsection 18(7) paragraph 3
14. At least five air samples must be taken inside each enclosure	subsection 18(7) paragraph 4
15. At least five air samples must be taken outside the enclosure but inside the building	subsection 18(7) paragraph 4
16. Concurrent sampling must be done inside and outside the enclosure	subsection 18(7) paragraph 5

Clearance Air Testing	
17. The work area inside the enclosure passes the clearance air test if the average concentration of asbestos fibres in the samples collected inside the enclosure is statistically less than the average concentration of asbestos fibres in the samples collected outside the enclosure, or if there is no statistical difference between the two average concentrations	subsection 18(7) paragraph 6
18. Within 24 hours after the clearance air testing results are received the owner and the employer must post a copy of the result in a conspicuous place or places at the workplace	subsection 18(8)(a) subclause (i)
19. Within 24 hours after the clearance air testing results are received the owner and the employer must post a copy of the result in a conspicuous place or places in the common area of the building if the building contains other workplaces	subsection 18(8)(a) subclause (ii)
20. A copy of the results must be provided to the joint health and safety committee or the health and safety representative, if any, for the workplace and for the building	subsection 18(8) clause (b)
21. The owner of the building must keep a copy of the clearance air testing results for at least one year after receiving them	subsection 18(9)

Protective Clothing and Equipment	
1. Only persons wearing protective clothing and equipment may enter a work area where there is an asbestos dust hazard **TYPE 2 AND 3 OPS**	section 15 paragraph 14
2. Protective clothing must be provided by the employer and worn by every worker who enters the work area **TYPE 2 AND 3 OPS**	section 15 paragraph 12
3. The protective clothing shall be made of a material that does not readily retain or permit penetration of asbestos fibres **TYPE 2 AND 3 OPS**	section 15 subparagraph 12i
4. The protective clothing must consist of head covering and full body covering that fits snugly at the ankles, wrists and neck to prevent asbestos fibres from reaching the garments and skin under the protective clothing **TYPE 2 AND 3 OPS**	section 15 subparagraph 12ii
5. The protective clothing must include suitable footwear **TYPE 2 AND 3 OPS**	section 15 subparagraph 12iii
6. The protective clothing must be repaired or replaced if torn **TYPE 2 AND 3 OPS**	section 15 subparagraph 12iv
7. Protective clothing must be decontaminated by damp wiping or HEPA vacuuming before leaving the work area **RESTRICTED TO SPECIFIED TYPE 2 OPS.**	section 16 subparagraph 6i
8. Protective clothing that will not be reused must be decontaminated and disposed of in a prescribed asbestos waste container **RESTRICTED TO SPECIFIED TYPE 2 OPS**	section 16 subparagraph 6ii
9. The employer must provide every worker who will enter the work area with a NIOSH approved respirator in accordance with Table 2 of the Regulation **TYPE 2 AND 3 OPS**	section 15 paragraph 11
10. The worker must wear and use the respirator provided by the employer **TYPE 2 AND 3 OPS**	section 15 paragraph 11

Protective Clothing and Equipment	
11. The employer must establish written procedures for the selection, care and use of respirators **ALL TYPE OPS**	subsection 13(3) clause (a)
12. A copy of the procedures must be given to and reviewed with each worker who is required to wear a respirator **ALL TYPE OPS**	subsection 13(3) clause (b)
13. A worker shall not be assigned to an operation requiring the use of a respirator unless the worker is physically able to do the work while wearing the respirator **ALL TYPE OPS**	subsection 13(4)
14. Respirators must be fitted so that there is an effective seal between the respirator and the worker's face, unless the respirator is a hood or helmet type **ALL TYPE OPS**	subsection 13(1) clause (a)
15. Respirators must be assigned to a worker for his or her exclusive use, if practicable **ALL TYPE OPS**	subsection 13(1) clause (b)
16. Respirators must be used and maintained in accordance with written procedures that are consistent with the manufacturer's specifications **ALL TYPE OPS**	subsection 13(1) clause (c)
17. Respirators that are assigned to one worker must be cleaned, disinfected and inspected at least after use on each shift **ALL TYPE OPS**	subsection 13(1) clause (d)
18. Respirators that are used by more than one worker must be cleaned, disinfected and inspected after each use **ALL TYPE OPS**	subsection 13(1) clause (d)
19. Damaged or deteriorated respirator parts must be replaced before the respirator is used by a worker **ALL TYPE OPS**	subsection 13(1) clause (e)
20. Respirators must be stored in a convenient, clean and sanitary location when not in use **ALL TYPE OPS**	subsection 13(1) (f)

Protective Clothing and Equipment	
21. Workers must receive training in the use, cleaning and disposal of respirators and protective clothing **ALL TYPE OPS**	subsections 19(1) to (3)
22. The respirator training must include the limitations of the equipment, inspection and maintenance, proper fitting and cleaning and disinfection **ALL TYPE OPS**	subsection 19(3) clauses (a) to (d)

OTHER MEASURES AND PROCEDURES APPLICABLE TO ALL TYPES OF OPERATIONS	
Training and Certification	
1. The employer must ensure that instruction and training in the hazards of asbestos exposure is provided, by a competent person, to every worker working in Type 1, Type 2 or Type 3 operations	subsection 19(1) paragraph 1
2. The employer must ensure that instruction and training in personal hygiene and work practices is provided, by a competent person, to every worker working in Type 1, Type 2 or Type 3 operations	subsection 19(1) paragraph 2
3. The employer must ensure that instruction and training in the use, cleaning and disposal of respirators and protective clothing is provided, by a competent person, to every worker working in Type 1, Type 2 or Type 3 operations	subsection 19(1) paragraph 3
4. The joint health and safety committee or health and safety representative for the workplace must be told where and when the prescribed instruction and training will be given	subsection 19(2)
5. The instruction and training related to respirators must include instruction and training related to the limitations of the equipment (subsection 19 (3) clause (a)).The instruction and training related to respirators must include inspection and maintenance of the equipment	subsection 19(3) clauses (a) and (b)

Training and Certification	
6. The instruction and training related to respirators must include proper fitting of a respirator	subsection 19(3) clause (c)
7. The instruction and training related to respirators must include respirator cleaning and disinfection	subsection 19(3) clause (d)
8. The employer must ensure that every worker involved in a Type 3 operation has successfully completed the Asbestos Abatement Worker Training Program approved by the Ministry of Training, Colleges and Universities	subsection 20(1) clause (a)
9. The employer must ensure that every supervisor involved in a Type 3 operation has successfully completed the Asbestos Abatement Supervisor Training Program approved by the Ministry of Training, Colleges and Universities	subsection 20(1) clause (b)
10. The employer must ensure that every worker and supervisor of a worker successfully completes the program required by subsection 20(1) before doing or supervising the work that the program relates to	subsection 20(2)
11. A document issued by the Ministry of Training, Colleges and Universities showing that a worker has successfully completed a program mentioned in subsection 20(1) is proof of the worker's successful completion of the program	subsection 20(3)
12. A worker who has completed equivalent training in another province or territory shall be deemed to hold a document showing successful completion of the program as determined by the Director	subsection 20(4)

Asbestos Work Report	
13. The employer of a worker working in a Type 2 or Type 3 operation must complete an asbestos work report in a form obtained from the Ministry for each worker at least once every 12 months	subsection 21(1) clause (a)
14. The employer of a worker working in a Type 2 or Type 3 operation must complete an asbestos work report in a form obtained from the Ministry immediately on the termination of the employment of a worker	subsection 21(1) clause (b)
15. As soon as the asbestos work report is completed the employer must send a copy to the Provincial Physician, Ministry of Labour	subsection 21(2) clause (a)
16. As soon as the asbestos work report is completed the employer must give a copy to the worker	subsection 21(2) clause (b)
Equivalency	
17. A constructor or employer may vary a measure or procedure if the varied measure or procedure affords protection for the health and safety of workers that is at least equal to the protection that would be provided by complying by the Regulation **AND**	section 23 paragraph 1
if the constructor or employer gives written notice of the varied measure or procedure to the joint health and safety committee or the health and safety representative (section 23 paragraph 2)	subsection 24(1) clause a
Notification	
18. Written notice may be given to a Ministry inspector by sending it by ordinary mail, by courier or by fax	subsection 24(1) clause b
19. Written notice may be given to the Ministry inspector by electronic means that are acceptable to the Ministry	subsection 24(1) clause c
20. Oral notice to the Ministry inspector may be given in person	subsection 24(2) clause a

Notification	
21. Oral notice to the Ministry may be given by telephoning the inspector	subsection 24(2) clause b
22. Oral notice to the Ministry may be given by electronic means that are acceptable to the Ministry	subsection 24(2) clause c

Appendix 5 – Occupational Health & Safety Contact Information

Many of the 800 or toll-free numbers listed below are accessible only within the area code of the relevant office.

CENTRAL REGION
Central Region includes **Toronto** and the following counties: Dufferin, Durham, Peel, Simcoe and York

Central Occupational Health and Safety Duty Desk
Tel: 416-314-5421 / 800-991-7454
Fax: 416-235-3972

EASTERN REGION
Eastern Region includes the following counties: Frontenac, Haliburton, Hastings, Lanark, Leeds & Grenville, Lennox & Addington, Muskoka, Northumberland, Ottawa-Carleton, Peterborough, Prescott & Russell, Prince Edward, Renfrew, Stormont Dundas & Glengarry and Victoria

Ottawa
1111 Prince of Wales Dr, Ste 200
Ottawa K2C 3T2
(effective January 1, 2008)
347 Preston St, 4th Flr
Ottawa K1S 3J4
Tel: 613-228-8050 / 800-267-1916
Fax: 613-727-2900

Kingston
51 Heakes Lane
Beechgrove Complex
Kingston K7M 9B1
Tel: 613-545-0989 / 800-267-0915
Fax: 613-545-9831

Peterborough
300 Water St N
3rd Fl South Tower
Peterborough K9J 8M5
Tel: 705-755-4700 / 800-461-1425
Fax: 705-755-4724

NORTHERN REGION
Northern Region includes the following counties: Algoma, Cochrane, Kenora, Manitoulin, Nipissing, Parry Sound, Rainy River, Sudbury, Thunder Bay and Timiskaming

Sudbury
159 Cedar St, Ste 301
Sudbury P3E 6A5
Tel: 705-564-7400 / 800-461-6325
Fax 705-564-7435

North Bay
101 McIntyre St West
North Bay P1B 2Y5
Tel: 705-497-5234 / 877-717-0778
Fax: 705-497-6850

Sault Ste. Marie
70 Foster Dr, Ste 480
Sault Ste Marie P6A 6V4
Tel: 705-945-6600 / 800-461-7268
Fax 705-949-9796

Thunder Bay
435 James St S, Ste 222
Thunder Bay P7E 6S7
Tel: 807-475-1691 / 800-465-5016
Fax 807-475-1646

Timmins
(mailing address)
P.O. Bag 3050
South Porcupine P0N 1H0
(office address)
Ontario Government Complex
D Wing Highway 101 E
Porcupine P0N 1C0
Tel: 705-235-1900 / 800-461-9847
Fax 705-235-1925

WESTERN REGION
Western Region includes the following counties: Brant, Bruce, Elgin, Essex, Grey, Haldimand-Norfolk, Halton, Hamilton-Wentworth, Huron, Kent, Lambton, Middlesex, Niagara, Oxford, Perth, Waterloo and Wellington

Western Occupational Health and Safety Call Centre
Tel: 905-577-9774 / 877-202-0008
Fax: 905-577-1316

NOTES:
- The above contact numbers are for reporting fatalities and critical injuries, work refusals, unsafe workplace complaints and joint health and safety committee disputes, as well as assistance with the application of the OHS Act and regulations, and referrals to other health and safety partners (WSIB, IAPA, CSAO, etc).
- For health and safety emergencies outside of regular business hours, please contact the Spills Action Centre (SAC) at 416-325-3000 or 800-268-6060.
- All calls relating to employment standards (i.e., hours or work, overtime, public holidays, vacation, leaves of absence, termination, etc.) should be directed to the ES Information Centre at 416-326-7160 or 800-531-5551.
- For more contact information, or if you're not sure what region you're in, please see "Employment", "Health and Safety" or "Labour" in the Blue Pages of the local Telephone Directory, or see the List of Regional Offices (under "Contact Us") on the Ministry's website: http://www.labour.gov.on.ca

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